Potentialities for payment mechanisms for environmental services in the Congo Basin forests: the case of biodiversity conservation

By

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BCI:	Bonobo Conservation Initiative
CBD:	Convention of Biological Diversity
CBFP:	Congo Basin Forest Partnership
CAR:	Central African Republic
CI:	Conservation International
CARPE:	Central Africa Regional Program for Environment
COMIFAC:	Conference of Ministers in Charge of Forest in Central Africa
COVAREF:	Committee of valorization of wildlife resources
DGIS:	Netherlands Department General of International Cooperation
ECOFAC:	Central Africa Forest Ecosystems
ES:	Environmental Services
FAO:	Food and Agriculture Organization
FFEM:	French Global Environmental Facility
FONAFIFO:	National Forestry Financial Fund in Costa Rica
GCF:	Global Conservation Fund
GEF:	Global Environmental Facility
GTZ:	Gesellschaft für Technische Zusammenarbeit
ICDP:	Integrated Conservation Development Projects
ITTO:	International Tropical Timber Organization
IUCN:	International Union for Conservation of Nature
KfW:	German Development Bank
MBIFCT:	Mgahinga Bwindi Impenetrable Forest Conservation Trust
NGO:	Non Governmental Organizations
NTFP:	Non Timber Forest Product
PA:	Protected Area
PES:	Payments for Environmental Services
RAPAC:	Central African Protected Area Network

REDD:	Reduced Emissions from Deforestation and Degradation
TDR:	Transferable Development Rights
TOU:	Technical Operational Unit
UNDP:	United Nation Development Program
UNESCO:	United Nation Educational, Scientific and Cultural Organization
USAID:	United State Agency for International Development
UWA:	Uganda Wildlife Authority
WCS:	Wildlife Conservation Society
WWF:	World Wide Fund for Nature
ZICGC:	Community Hunting Zones

Abstract

The present study investigates the potential for direct payment for biodiversity conservation implementation in the Congo Basin. A survey realized in 31 protected areas in the Congo Basin showed that some initiatives, starting with raising awareness, are used to raise local participation in conservation, but there are very few conservation agreements with local people. Attempt to biodiversity conservation in/around PAs is done through three main approaches. Indirect incentive approaches are the most used (63%) in front of direct incentives for sustainable biodiversity use (30%). Direct incentives for biodiversity conservation (7%) are quite new and are still not bound by conservation contracts. Five initiatives are being implemented including rewards for denunciating poachers (in 2 PAs), conservation of marine turtles in Campo Ma'an TUO, compensation of farmers for damages caused by wildlife in their farmland and paying a local community to set aside an area as no man's land for carbon sequestration evaluation. Three other initiatives are still in their planning phase. They are conservation concession projects proposed by conservation organizations (WWF, CI and BCI) to governments of Cameroon, CAR and DRC.

Use-restriction on some elements of the biodiversity like wildlife is likely to be the best PES scheme in the Congo Basin compared to area-based schemes, since people heavily depend on land for their livelihood. The success of the conservation contracts will depend on securing property rights, a careful evaluation of opportunity costs considering ways and customs of local people, a clear definition of indicators (people efforts and results), a democratic and equitable use of compensation funds and an establishment of a strong institutional framework and monitoring authority for contract enforcement. All this may involve high transaction costs to improve efficiency of payments. Conservation contracts in the Congo Basin may not be such a cheap way to achieve biodiversity conservation as thought by many conservationists. A part from biodiversity market, possible mechanisms to finance them can be Trust fund for PA management and the future REDD mechanism. Finally, government efforts in clarification of customary rights will be required. However, the efficiency of conservation contracts to achieve biodiversity conservation is widely recognized and there is a great interest of conservationists for direct payments for biodiversity conservation in the Congo Basin.

Key words: *Congo Basin, biodiversity conservation, protected areas, incentives, local people, conservation contracts, direct payments, property rights, transaction costs, efficiency, REDD*

Résumé étendu

Les populations rurales supportent d'importants coûts d'opportunité dus à la création des aires protégées. Ceci constitue un grand frein à leur implication dans la gestion de ces aires protégées. Des projets de conservation et de développement intégrés ont été introduits en vue d'accroître les revenus des populations locales et d'améliorer la gestion des parcs. Les résultats de tels projets restent toutefois mitigés en termes de conservation de la biodiversité. Face à cette situation de mécanismes innovateurs pour la conservation de la biodiversité sont entrain d'être mis en place par les conservationnistes. Au rang de ceux-ci se trouvent les paiements pour les services environnements (PSE) avec pour objectif de gratifier les acteurs qui maintiennent la biodiversité. L'objectif de ce travail est d'examiner les potentialités des mécanismes de paiement pour la conservation de la biodiversité des forêts du Bassin du Congo. Pour y parvenir les mécanismes de compensation des populations riveraines des aires protégées pour leur action dans la conservation de la biodiversité ont été recensés. Ceci a été réalisé au travers des questionnaires et des interviews auprès des conservateurs et des organisations d'appui à la gestion de 31 aires protégées du Bassin du Congo.

Il ressort de cette étude que la gestion des aires protégées du Bassin du Congo est financée en grande partie par la communauté internationale qui serait le principal bénéficiaire de la conservation de la biodiversité. Ainsi, 42% des financements proviennent des fonds publics internationaux, 26% des fonds privés internationaux et 32% des fonds publics nationaux. En vue d'impliquer les populations locales à la conservation de la biodiversité, 3 types d'approches incitatives ont été développées. L'approche la plus courante est celle des incitations indirectes à la conservation qui représentent 63% des initiatives et visent la promotion du développement comme alternative à l'exploitation de la biodiversité. Dans cette catégorie se retrouvent la réalisation des projets de développement, la mise en place des activités alternatives et la formation des groupes socioprofessionnels. Les incitations pour l'utilisation durable de la biodiversité viennent en seconde position (30%) et visent la valorisation de la biodiversité en vue de sa gestion durable. On y retrouve l'écotourisme, la chasse sportive dans les zones d'intérêt cynégétique à gestion communautaire, la foresterie communautaire. La 3^{e} approche est plus rarement pratiquée (7%) et vise directement la conservation de la biodiversité. C'est dans cette catégorie que rentrent les paiements directs pour la conservation de la biodiversité dans le cadre des PSE. Elle consiste à compenser, sur

une base contractuelle, les populations locales pour la réduction ou l'abandon des droits d'usage qui constituent une menace pour la biodiversité.

Huit exemples d'incitation directe à la conservation de la biodiversité ont été recensés. Ils peuvent être regroupés en deux systèmes :

- l'un *basé sur la surface* où le contrat stipule la superficie de forêt à mettre hors d'usage. Trois exemples ont été recensés sous l'appellation de concession de conservation. Ceux-ci restent cependant encore des propositions, aucun projet n'ayant encore vu le jour. Ils sont calqués sur le modèle des concessions forestières.

Présentation des propositions de concessions de conservation (CC)

	Ngoila-Mintom	Réserve Spéciale de Dzanga Sangha	CC à Bonobo
Pays	Cameroun	RCA	DRC
Superficie (ha)	546 814	237 000	681 000
Organisation promotrice	WWF et CI	WWF	CI

- l'autre basé sur la *restriction d'usage* d'un élément de la biodiversité. Cinq exemples de compensation pour la restriction des droits d'usage ont été recensés. Il s'agit des rémunérations pour l'abandon de la pêche de tortues marine et de la chasse commerciale à travers la dénonciation des braconniers ; et le remboursement des dommages causés par la faune sur les cultures. Toutefois, ces rémunérations ne font pas encore l'objet des accords contractuels de conservation.

La commercialisation des services environnementaux n'est mentionnée dans aucune des lois forestières du Bassin du Congo, ce qui n'exclut pas la mise en place des PSE. Toutefois, pour faciliter le développement des paiements directs pour la conservation de la biodiversité certaines conditions doivent être considérées.

- *Les droits d'usage et le foncier*. Dans le contexte africain, les usagers des forêts n'en sont pas propriétaires. Cependant, les personnes ou communautés qui sont fournisseurs du service de conservation de la biodiversité devraient avoir des droits d'usage, de gestion et d'exclusion sur les ressources concernées. Ces droits doivent être sécurisés pour permettre le contrôle de l'accès aux ressources. Il est important de tenir compte des droits coutumiers dans

la reconnaissance et la sécurisation des droits d'usage et du foncier. Les forêts communautaires et les ZICGC seraient un atout pour la mise en place des mécanismes de PSE car elles donnent aux communautés des droits d'usage sécurisés sur les ressources forestières et fauniques.

- *Le type de système à mettre en place*. Mettre en place un système basé sur la surface nécessite l'établissement d'un scenario de référence pour l'évaluation des efforts de conservation. Toutefois, un tel système limiterait le développement des populations rurales en réduisant leur accès à la terre dont ils dépendent grandement pour leur survie au travers de l'agriculture. Un autre frein à ce système est l'absence du droit de propriété des locaux sur la terre. Ainsi, un système basé sur les restrictions d'usage de certains éléments de la biodiversité apparaîtrait mieux adapté dans ce contexte. Ce système se focaliserait par exemple sur la conservation de certaines espèces emblématiques menacées d'extinction par le braconnage. Ces espèces, notamment les grands mammifères, les tortures marines et certaines espèces d'oiseaux, trouveraient plus facilement un marché auprès de la communauté internationale, principal acheteur potentiel des services de conservation de la biodiversité.

- *Les coûts d'opportunité*. Les coûts d'opportunités subis par les acteurs locaux vont souvent bien au delà des revenus agricoles. Ils doivent être minutieusement évalués mais cela nécessite du temps et des efforts qui peuvent engagés des coûts de transaction élevés. Toutefois, ils doivent tenir compte de l'évolution des économies rurales et du désir des acteurs locaux d'améliorer leurs conditions de vie. Les coûts d'opportunité ne seront donc pas fixes tout au long des contrats et doivent être réévalués avec le temps.

- *Sous quelle forme payer les compensations?* Compenser les acteurs locaux par paiement comptant les exposer à une dépendance poussée vis-à-vis du marché pour leur besoin de subsistance. Créer des marchés ruraux pour résoudre ce problème entraînerait des coûts de transaction élevés. Comme alternative, ces compensations pourraient être utilisées pour créer un fonds de développement local pour la mise œuvre des projets si le vendeur du service environnement est la communauté entière. Mais cette option ferait face au problème de détournement de fonds courant dans le Bassin du Congo. Ceci nécessite donc la mise en place d'un bon système de contrôle.

- *Suivi et monitoring.* Il est important d'avoir une autorité légale et légitime qui s'engage dans les contrats de conservation pour assurer le respect des clauses. Cette autorité doit être reconnue de toutes les parties prenantes et être apte à faire respecter les contrats.

- *Durabilité des financements.* Les PSE fonctionnent sur le principe de l'existence d'au moins un bénéficiaire désireux de payer pour la production du service. Il est important de trouver d'autres sources de financements pour ces mécanismes au cas où les acheteurs venaient à ne pas être permanents. Dans ce cadre, il est possible d'envisager le financement des paiements directs pour la conservation de la biodiversité dans le futur mécanisme REDD ou dans les fonds fiduciaires pour le financement des aires protégées.

Les PSE peuvent faire face à plusieurs obstacles dans le Bassin du Congo dont entre autre une faiblesse à faire respecter les lois et les contrats, la non sécurisation des droits d'usage et du foncier, les lenteurs administratives et l'appropriation des projets de développement par les élites, la grande dépendance des terres pour l'agriculture qui entraînerait des coûts d'opportunité élevés. Lever ces obstacles entraînerait des coûts de transaction élevés qui rendraient ce mécanisme plus cher que l'ont pensé certains auteurs.

I Introduction

1.1 Background and significance of the research

Since 1961, tropical countries have lost over 500 million hectares of forest cover (FAO, 2000) and the consumption of forest products has risen by 50 percent worldwide within a period of 30 years (Gardner-Outlaw and Engelman, 1999). This situation has lead to the loss of environmental services that play an important role in the livelihoods, economic development and health of human populations all around the world. The traditional response to this situation has been to promote forest conservation by introducing command-and-control measures in the form of laws and regulations (Mayrand and Paquin, 2004). This requires the existence of proper institutional and financial resources, which are often lacking in developing countries. In this context, regulatory approaches to conservation often miss environmental objectives due to the weakness of the environmental enforcement system and generalized noncompliance with actual national and local concerns. In addition, it can be difficult, and sometimes impossible, to enforce conservation measures, land use regulations or specific agricultural / forest management practices upon poor communities who depend on resource exploitation for their livelihood. Regulatory approaches sometimes hurt these populations by banning activities that are essential for their livelihoods and pushing them toward illegal survival patterns (Mayrand and Paquin, 2004). Moreover, the loss of biodiversity in tropical forests is a cause of global concern. However, the current costs of preservation are often not off-set by user values and it seems that the costs are disproportionally borne by the people living in areas rich in biodiversity. While most people would acknowledge that the total economic benefits - taking into account non-use values (existence and bequest values) - could easily compensate for the imposed costs, the issue of regional and intergenerational compensation remains to be tackled in a more satisfactory manner (Minten, 2003)

Furthermore, the Brundtland Report (1987) and the Rio 1992 Earth Summit showed that conservation would become sustainable only if poverty was alleviated. Following this, Integrated Conservation Development Projects (ICDPs) and sustainable forest management emerged as the two major approaches to simultaneously increase local incomes and conserve the environment (Salafsky and Wollenberg, 2000; Pearce *et al.*, 2003). ICDPs and Community-Based Natural Resource Management are indirect approaches to conservation. ICDPs were described by Franks and Blomley (2004) as approaches to the management and conservation of natural resources in areas of high biodiversity that aim to reconcile the

biodiversity conservation and socioeconomic development interests of multiple stakeholders at local, regional, national and international levels. Such projects encourage rural communities to maintain biodiversity by helping them to use it sustainably. They may also provide alternative sources of products, income, or social benefits (schools, wells, clinics, etc.) as a means of encouraging communities to cooperate. These kinds of efforts have been referred to as "conservation by distraction" (Ferraro and Simpson, 2002). But such initiatives rarely work because people are more likely to incorporate new sources of income as complements to existing activities rather than as substitutes for them (Kiss, 2002; Ferraro, 2001)

Evaluation of these approaches showed that they didn't achieve major shifts in tropical land-use trends (Sayer 1995; Brandon *et al*. 1998) and having little impact on neither forest conservation nor rural development. A recent review of ICDPs declared that there was "*a notable lack of successful and convincing cases where people's development needs have been effectively reconciled with protected area management*" (Wells *et al.*, 1999, p.1). However, some authors attribute these shortcomings from the failure to recognize some realities of integrating conservation and development (Adam *et al.*, 2004).

This leads to the emergence of much debate around the need for new conservation paradigms. At the center of calls for more direct conservation approaches is the concept of Payments for Environmental Services (PES) (Ferraro and Kiss, 2002; Niesten and Rice, 2004). PES schemes are market-based approaches which focus on efficiency gains while complying with current environmental legislature. PES schemes can be more effective, flexible and cost-effective than command-and-control strategies and the creation of traditional protected areas which is sometimes impossible due to socioeconomic and political considerations. Experience has shown that well designed market-based instruments can achieve environmental goals at less cost than conventional "command and control" approaches, while creating positive incentives for continual innovation and improvement (Stavins, 2000).

Since mid-1990, PES systems evolved in many parts of the tropics, in particular in Latin America (Robertson and Wunder, 2005). The concept of PES started in Costa Rica in 1996 when landowners accept to conserve their forest in return of a per-hectare annual payment. Such payment programs for biodiversity conservation are in various phases of development around the world.

PES schemes are relatively new in the Congo Basin which hosts the world's second-largest dense humid tropical forest after the Amazon. The biodiversity of the Congo Basin Forest is

of global significance because of both, the high number of species found in the region, known as species richness, and the number of plant and animal species that exist nowhere else on the planet, known as endemism. Although Central Africa has a low rate of deforestation compared with other tropical forest areas, its forest are undergoing degradation hard to assess (FAO, 2003). The biodiversity is threatened by human activities such as deforestation mainly caused by slash-and-burn agriculture, logging, mining and infrastructure development (Barrett, 1999). This reduces environmental services rendered by these forests. PES approaches for biodiversity conservation are still at its beginning in the Congo Basin and they are not well documented. It is important to know how far they have been developed and implemented. Moreover if they have not been developed yet, an assessment of the potentials for PES is needed.

1.2 Objectives

The present study will investigate the potential for direct payment for biodiversity conservation implementation in the Congo Basin. Specifically, this study will:

- Review literature concerning mechanisms of payments for biodiversity conservation;
- Investigate the mechanisms used to involve local communities in biodiversity conservation in the Congo Basin Region;
- Review the existing mechanisms of compensation;
- Identify the different initiatives of payments for biodiversity conservation that exist in the Congo Basin;
- Evaluate their potential effects and their limitations in terms of efficiency, equity and sustainability;
- Analyze the feasibility of such payment mechanism for biodiversity conservation in the Congo Basin.

II Literature review on Payment for Biodiversity Conservation

2.1 Definitions

Biological diversity – or "biodiversity" for short – is a general term for the diversity of genes, species and ecosystems that constitute life on earth. It is defined in Article 2 of the Convention on Biological Diversity (CBD) as "*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems*." (Convention on Biological Diversity, Article 2).

"*In-situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties*." (Convention on Biological Diversity, Article 2).

In the same Article 2, "Sustainable use" is defined as the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations. This is achieved through sustainable forest management. It is agreed that sustainable forest management aims to ensure that the goods and services derived from the forest meet present-day needs while at the same time securing their continued availability and contribution to long-term development. In its broadest sense, forest management encompasses the administrative, legal, technical, economic, social and environmental aspects of the conservation and use of forests (FAO, 2008).

The *Dictionary of Environmental Economics* defines the term "conservation" as the management of human use of the biosphere so that it may yield the greatest sustainable benefit to the present generation while maintaining its potential to meet the needs and aspirations of future generations (Markandya *et al.*, 2001). But according to the definitions provided in the CBD, these appear to be two alternate land use options of forests. The CBD presents then conservation as preservation of biodiversity which precludes any human use of forests, implying forests are preserved in their original or natural state without any human interference. This contrasts with sustainable use of biodiversity which also includes some conservation aspects. Hence different incentives have been used which promote either

sustainable use or conservation of biodiversity. The next section will highlight some differences in these two approaches of promoting biodiversity.

For conservation efforts to be successful, high participation of local people is required. A lot of definitions of participation exist. Participation is a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them (The World Bank, 1994). With regard to rural development, participation include people's involvement in decision-making processes, in implementing programs, their sharing in the benefits of development programs and their involvement in efforts to evaluate such programs (Cohen and Uphoff, 1977). Participatory conservation is about sharing of decision-making control with communities and providing them incentives to compensate them for a loss of access to resources and to promote conservation behaviors and attitudes (The World Bank, 2008).

2.2 Sustainable biodiversity use versus biodiversity conservation incentive agreements

Sustainable biodiversity use and conservation incentives are two different approaches to achieve biodiversity conservation. The difference between the two is use and non-use of biodiversity. The first pursues indirectly biodiversity conservation with objectives of reduce effect on biodiversity and maintain it by using it sustainably to generate sustained long-term flow of biodiversity services from a given forest area. The second approach is direct with objective of maintain biodiversity by not using it at all for a long-term habitat maintenance of the target area (Niesten and Rice, 2004).

On one side, sustainable biodiversity use promotes sustainable land use practices with hope to have conservation as a side benefit. Hence efforts of conservation refer to as "conservation by distraction" since conservation is somehow integrated into other development approaches (Ferraro and Simpson, 2002). On the other side, biodiversity conservation incentives target the decision of whether or not to harvest with the aim of keeping the integrity of the forest (intact natural ecosystems). Here, efforts are put only into conservation activities, biodiversity conservation is the core of any initiatives and hence conservation is targeted directly.

Sustainable biodiversity use incentives intend users to forgo short-term "mining" of renewable resources in favor of managing them for long-term gains. Sometimes, they are a

project approach focusing too much on project activities rather than conservation effects (Ferraro and Kiss, 2002). Biodiversity conservation incentives provide direct compensation in return for biodiversity conservation services. So, payments are conditional on conservation outcomes and income is a function of successful conservation. They are expected to be more cost-efficient than indirect approaches based on the principle that the cheapest way to get something you want is to pay for what you want rather than pay for something indirectly related to it (Ferraro and Kiss, 2002). For example, an analysis of a conservation intervention in southeastern Madagascar indicates that with $ 4 million of conservation funds invested in annual payments conditional on the protection of forest, about 80% of the original forest could be protected. Using the same amount, only 12% of forest could have been protected through support of indirect incentives (Conrad and Ferraro, 2001).

Both approaches have development benefits. While indirect approach seems to achieve conservation and development objectives simultaneously, biodiversity conservation incentives benefit poor farmers by improving cash flows and diversifying household income. But for some authors this is not a development benefit since paying an individual or community for "not doing something" might be seen as a form of social welfare rather than development (Ferraro and Kiss, 2002).

2.3 Payments for Environmental Services (PES)

2.3.1 Definition of the concept and its origin

The *Dictionary of Environmental Economics* defines environmental services as the ecological functions currently perceived to support and protect human activities of production and consumption or affect the overall human wellbeing in some way (Markandya *et al.*, 2001). Payments for Environmental Services are relatively new schemes with a dual objective of increasing conservation and improving livelihood. The concept of PES has experienced growing interest over the last years in both developed and developing countries, notably the United States and Australia, but it is also increasingly recognized in developing countries such as in Costa Rica, Mexico or Kenya for example (Wertz-Kanounnikoff, 2006). PES is the name for a variety of arrangements through which the beneficiaries of ecosystem services pay back the providers of those services.

Although PES schemes are generally perceived as a means to internalize externalities, no unique definition of PES has been established so far. One could choose to define PES by the additive meaning of the terms it contains, as any "payment" somehow intended to promote "environmental services" (Wunder, 2005).
Some consider all types of direct payments as PES, but others such as Wunder (2005) proposed to define PES more narrowly as:

1. a *voluntary* transaction where

2. a *well-defined* ES (or a land-use likely to secure that service)

3. is being 'bought' by a (minimum one) ES *buyer*

4. from a (minimum one) ES *provider*

5. if and only if the ES provider secures ES provision (*conditionality*).

This definition raises the five criteria to describe PES and distinguish them from other similar incentive payments such as eco-subsidies or tax-cuts for environmentally-friendly actions (Wunder, 2005). PES is a voluntary, negotiated framework, which distinguishes it from command-and-control measures (criterion 1). There is a voluntary participation focuses on cooperation between stakeholders rather than constraint top-down type approach of natural resource management during the 1970s and 1980s. It must be clear what exactly is being bought - it can be a directly measurable service or land-use restrictions that are likely to help providing that service (criterion 2). In any PES, there should be resources going from at least one ES buyer (criterion 3) to at least one provider (criterion 4) in a direct transaction, though the transfer often occurs through an intermediary. Conditionality requirement demands ex-post service remuneration (after the service has been rendered). User payments need to be truly contingent upon the service being continuously provided (criterion 5)

2.3.2 The idea of PES

Environmental services are "externalities" or public goods by their nature characterized by their non-excludability and non-rivalry. As consequent, local land manager do not receive any compensation for conserving them, and thus ignore them in their private land use decision-

making which often leads to the loss of environmental services (Wertz-Kanounnikoff, 2006). The logic of the argument underlying PES is as follows: when “free” environmental services are made scarce by human exploitation, they obtain an economic value. External service users might want to compensate local resource managers to ensure that the services they need will be provided now and in the future. Consequently, if such compensation is made, the local service providers receive an income for their additional protection efforts.

The core idea of PES consists therefore of external ES beneficiaries making direct, contractual and conditional payments to local landholders and users in return for adopting practices that secure ecosystem conservation and restoration and thus provision of ES (Wunder, 2005). In this way, land users are expected to receive a direct incentive to include ES in their land use decisions, ideally resulting in more socially optimal land uses than in the absence of such payments.

For other authors, on the other hand, PES is seen as transferable development rights (TDRs) (Panayotou, 1994). Producing environmental services, for example biodiversity conservation, leads to set aside land as habitat for biodiversity conservation resulting in high opportunity costs both in terms of current income and forgone development opportunities. Land owners should then be compensated for this foregone development opportunity since land is by far the most important capital asset in developing countries (Panayotou, 1994).

Nevertheless, these two justifications of PES highlight the fact that landholders or users who choose land use that preserves forest and maintains or produces environmental services should be compensated for benefits foregone by not choosing alternative land use. PES appears then to be a new form of financing biodiversity conservation and a potential international mechanism for biodiversity finance.

2.3.3 Basic assumptions of PES

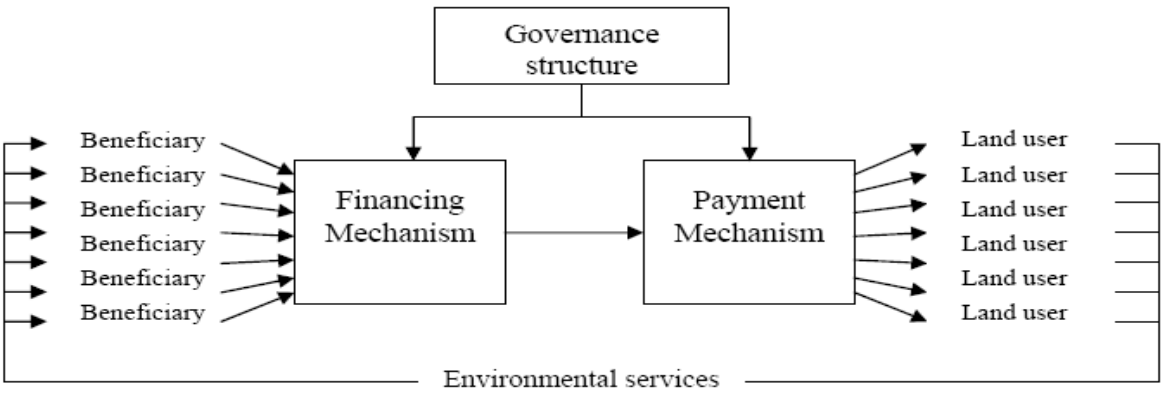
PES is based on a willing buyer – willing seller model. This assumes that there is at least one seller who has a real threat on biodiversity and is willing to receive a compensation to forsake its destructive activities on the biodiversity. Biodiversity services sellers should be the actual land users, having *de facto* land- and resource use control capacities. Moreover, from an efficiency point of view, only those who constitute a credible threat to ES provision should be paid (Wunder, 2005). On the other hand, there is a buyer who benefits from biodiversity

services and is willing to pay for biodiversity conservation. Biodiversity services' purchasers should be the actual users of biodiversity services (Wertz-Kanounnikoff, 2006).

Assuming that potential service providers and buyers are well identified, there should be a precise knowledge of how (land use type) and what type of biodiversity commodity are generated or provided. Adequate institutional arrangements like property rights, contracts between service providers and buyers and monitoring systems should exist. Adequate governance structures such as clear identification of service providers and service buyers, as well as any intermediary agent, including their respective role and responsibilities are also relevant in proper functioning of PES (Wertz-Kanounnikoff, 2006).

The payment must be more than the additional benefit to land users of the alternative land use and less than the value of the benefits gained by the service users, in order to change the behavior of the land owners and obtain a payment from the service beneficiaries. This means the benefits through conservation incentive agreements must outweigh returns from alternative uses of the target area and beneficiaries should not have to pay more than the value of the service to them. The payments can be invested in economic activities that will provide alternative jobs to forest users and improve human welfare (Niesten and Rice, 2004). Negotiated terms of a conservation incentive agreement can include, for example, a portfolio of activities to which annual payments will be directed. Transaction costs should be low in order to optimize the use of resources collected from beneficiaries.

The common basic structural design of PES is presented in Figure 1 below:



Source: Pagiola and Platais, 2002.

Figure 1: Basic structural design of PES

2.3.4 Different types of PES

Although PES schemes distinguish themselves from other conservation tools, internally, they are also a quite diverse family. The main differences are:

1- Based on the vehicles used to achieve conservation or restoration effects, we distinguish area-based schemes and product-based schemes. In area-based schemes, contracts stipulate land- and/or resource-use caps for a pre-agreed number of land units. Examples are conservation concessions (Niesten *et al.*, 2004; Hardner and Rice 2002). In product-based schemes, consumers pay a 'green premium' on top of the market price for a production scheme that is certified to be environmentally friendly, especially vis-à-vis biodiversity (Pagiola and Ruthenberg, 2002).

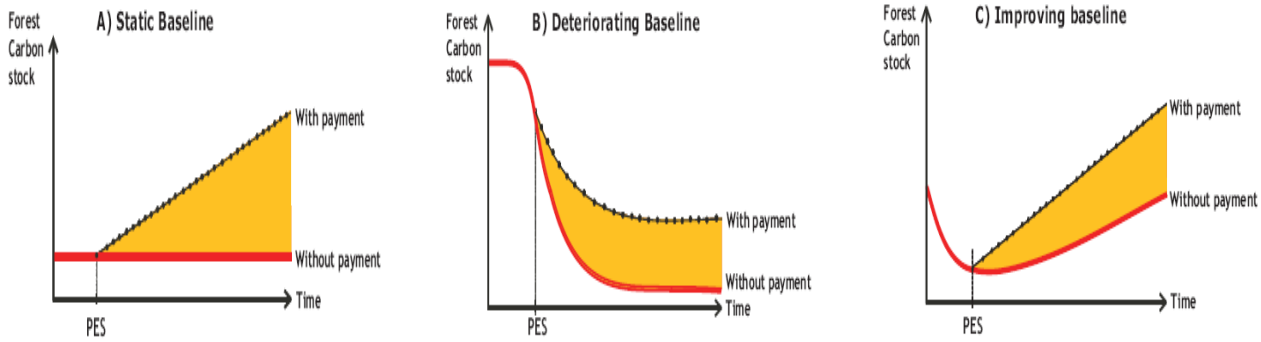
2- According to who the buyers are, we distinguish public schemes and private schemes. In public schemes (e.g. in Costa Rica, Mexico, China), the state acts on behalf of ES buyers by collecting taxes and grants and paying alleged ES providers (Wunder, 2005). Private schemes are more locally focused and buyers pay directly. Public schemes are generally larger in scope and have the state providing legitimacy, which many private schemes struggle hard for.

3- Based on how the environmental services are produced, we distinguish "use-restriction" and "asset-building" schemes. In the first one, PES schemes reward providers for conservation, for capping resource extraction and land development, or for fully setting aside areas such as for protected habitat. Here, landowners are paid for their conservation opportunity costs, plus possibly for active protection efforts against external threats (Hardner and Rice 2002). Asset-building schemes aim to restore an area's environmental services, for example reforestation of a degraded landscape.

It is important to choose the right scheme depending on the context since willingness to pay of service users will only raise if schemes can demonstrate clear additionality vis-à-vis established baselines (Wunder, 2005). Baseline represents what will hypothetically happen without the PES scheme. Wunder (2005) presented three different PES baselines where the yellow space represents the additionality (Figure 2).

The static baseline assumes that forest carbon stocks remain constant in time; an example is current clean development mechanism rules. The declining (deteriorating) baseline assumes that forest cover will decrease in time. This is the case of tropical countries where

deforestation is an integral part of development and will continue in time. Improving scenario means forest cover increase over time; that is in countries with advanced forest transition.



Source: Wunder (2005)

Figure 2: Three fundamental PES baseline scenarios

2.3.5 Obstacles to PES

Major obstacles to effective PES include demand-side limitations and a lack of supply-side know-how regarding implementation. Inadequate information, poorly defined property rights, a lack of organization or management capacity and other factors can impede landholders from responding even when appropriate incentives are in place (Wunder, 2007).

There are specific legal and social obstacles making the application of a direct payment approach challenging in developing countries (Kiss, 2002), such as:

- Insecure land property rights;
- Rural populations mostly earn their living directly from subsistence agriculture or extraction of natural resources. There is then limited local opportunities for nonagricultural investment or employment
- Property taxes do not exist. The financial incentives must therefore be provided as direct cash transfers, which is usually more difficult to implement than tax reliefs.
- The weak judicial systems typical of many developing countries and the limited experience with and enforcement of legal contracts can make it difficult to obtain and enforce long-term legal commitments. Therefore, the most likely method is to provide the payments distributed over time.

- Working with small, dispersed farmers imposes high transaction costs. A possible way to reduce transaction costs is to organize farmers into groups through which they can join an incentive program (Pagiola and Platais, 2002).

2.4 PES for biodiversity conservation

The majority of the world's remaining biodiversity is found in tropical developing countries, while the great majority of biodiversity supporters are from industrialized countries (Kiss, 2002). Many conservation-related projects have been supported by World Bank and many other international donors and organizations (Hardner and Rice, 2002). Despite the high level of investments and efforts, the conservation community collectively can only point to some individual, localized successes, but taken as a whole, there is only little impact on stopping or even slowing the rising tide of biodiversity loss (Ferraro and Kiss, 2002). Like most people, landholders and resource users in developing countries make their decisions based mainly on their perceived self-interest, with a strong bias towards the short term. Unfortunately, the benefits of conserving biodiversity tend to be long-term, indirect and diffuse, while the benefits of activities that destroy or degrade biodiversity tend to be short-term, direct and easily captured by individuals (Kiss, 2002). The key question therefore is: how can we encourage those who make the land use decisions in these areas to forego the benefits associated with destructive activities in favor of conserving biodiversity? One way that biodiversity conservation can compete with destructive land uses is through conservation incentive agreements (Niesten and Rice, 2004). There is a need to encourage and reward landholders to achieve conservation outcomes through including biodiversity conservation in their land use decision. Therefore, landowners receive direct incentives in return for conservation services in the context of PES.

The market for biodiversity conservation is primarily international due to the global nature of the services provided (Landell-Mills and Porras, 2002). Forest biodiversity is valued for a range of features, from its role in maintaining a stock of information for potential future use to its existence value. For the most part, these services are consumed internationally. While demand is broad-based, expressed willingness to pay is concentrated in the West and this willingness is translated into real payments for biodiversity protection by national

governments, international NGOs and increasingly by private companies (Landell-Mills and Porras, 2002).

2.5 Types of biodiversity conservation commodities

To market forest biodiversity, it is essential to clearly know what is been sold. Unless a unit of biodiversity can be defined, we must resort to the use of proxies, i.e. items that can be marketed in place of biodiversity to achieve the desired goals (Landell-Mills and Porras, 2002). A range of commodities have been used to market forest biodiversity protection. Among these are biodiversity business shares, biodiversity credits/offsets, biodiversity-friendly products, bioprospecting rights, concession easements, development rights, land lease/conservation concession, land acquisition, management contracts, protected areas, research permits (Landell-Mills and Porras, 2002).

These commodities contribute to either sustainable biodiversity management or biodiversity conservation. Among those contributing to biodiversity conservation, there are:

- **Conservation easements.** They refer to contracts between landowners and those who wish to protect or expand certain natural ecosystems (e.g. native forests), whereby the landowner is paid to manage their land in ways that achieve the desired conservation objective.
- **Development rights**. The idea is to allocate development rights up to the selected limit, and to allow these to be purchased by landowners. The development right can also be sold to conservationists by the landowner who receives a compensation for conservation opportunity costs.
- **Land lease/conservation concession**. Conservation concessions are essentially a land lease, involving the allocation of forest use rights in a defined area to the landlord who commits to protect the forest from unsustainable timber and NTFP harvesting. The right to protect forests is purchased from the government for an up-front payment and annual fees.
- **Land acquisition**. Amongst the simplest approaches to capturing demand for biodiversity protection is to sell the land on which biodiversity exists.
- **Protected areas**. Protected areas are formally designated by national authorities to protect a range of environmental services, including biodiversity.

2.6 Implementation of PES schemes for biodiversity conservation

2.6.1 Conservation Concessions

Conservation concessions are time-bound agreements to conserve a given land area instead of developing or degrading it (Wunder and Wertz-Kanounnikoff, 2007). It was introduced to compete directly with use-related concessions such as timber. In its simplest form, a conservation concession can be arranged like a timber concession, whereby a logging company pays the government for the right to extract timber from an area of public forestlands. Rather than log the concession area, the conservation investor would pay the government for the right to preserve the forest intact (Rice, 2002).

Some pilot experiences of conservation concession as direct biodiversity payments exist. Conservation concessions have been applied by Conservation International (CI) – for instance, in Guyana where a renewable 30-year agreement was signed in July 2002 with the national government to manage 80,000 hectares in southern Guyana for conservation. It also involved a separate agreement with three nearby communities establishing a voluntary community investment fund (Rice, 2002). In the CI strategy, the conservation concession follows the same legal model as a standard timber sales agreement, except that the land is held as a reserve rather than harvested for timber. The responsibility of governing the agreement and monitoring the forest was given to a nonprofit NGO known as the Amazon Conservation Association. According to the terms of the agreement, CI will pay market rates to protect the land for 30 years, with start-up costs and government fees (Ellison, 2003). Conservation concessions also benefited residents in 16 Amerindian communities near the forest through a renewable “voluntary fund” to provide social assistance to local residents such as agricultural training, technical support, and scholarships to children, and to support ecotourism projects (Denny, 2004). Another example is the 67.6 million hectare of forest estate that was granted in July 2001 to a Peruvian NGO (Asociación para la Conservación de la Cuenca Amazónica) as the Peru’s first conservation concession (Rice, 2002).

2.6.2 Conservation agreements

Under a conservation agreement, national authorities or local resource owners agree to protect natural ecosystems in exchange for a steady stream of structured compensation from conservationists or other investors (Niesten and Rice, 004). The Conservation Agreement

specifies conservation actions to be undertaken by the resource users, and benefits that will be provided in return for those actions. The conservation actions to be undertaken by the resource users are designed in response to the threat to biodiversity (CI, 2007). The benefits are structured to offset the opportunity cost of conservation incurred by the resource users. In addition, the Conservation Agreement details the monitoring framework used to verify execution of the conservation actions, and the sanctions to be applied if conservation actions are not executed.

Conservation agreements can be developed as conservation easements. The oldest effort of paying people to conserve land is the U.S. government's multibillion dollar payments to set aside cropland (Ellison, 2003). Widely experienced in the US, conservation easements refer to contractual arrangements by which landholders transfer, in perpetuity, their land use rights over a given land parcel to a conservation agency for conservation purposes. Easements are either voluntarily sold or donated by the landowner who retains certain property rights and can live on and use their property (The Nature Conservancy, 2004).

In the tropics, there have been some conservation agreements in Mexico (Ellison, 2003). One is a 15-year contract, signed in early 2000, between the Wildlands Project, five Mexican NGOs, and a land cooperative whose members pledged to protect old-growth forest in the Sierra Madre Occidental Mountains of northern Chihuahua. The government was not involved. The land cooperative agreed to surrender its rights to log the area in return for cash and benefits amounting to about half of what it might have earned from timber. This agreement has been a success for conservation (Ellison, 2003). A second Mexican project offered conservation incentives to residents of the Monarch Butterfly Biosphere Reserve, to protect forest in the core zone of the protected area. Despite the agreement, some logging was continuing by outsiders even in the core area of the reserve, where it is forbidden.

In the case of Costa Rica, until 2002, conservation easements were developed on five-year contract basis with FONAFIFO (National Forestry Financial Fund), because of the uncertainty of future funding (Pagiola, 2002).

2.6.3 Conditions under which these mechanisms have been implemented

In Costa Rica, PES have been implemented under the Forestry Law N° 7575 enacted in 1996 which recognizes four environmental services provided by forest ecosystems. Among these,

there are biodiversity conservation services (Pagiola, 2002). The law provides the regulatory basis for the government to contract landowners for the services provided by their lands, and has established a financing mechanism for this purpose in the form of FONAFIFO. PES also arose in a context where an elaborate system of payments for reforestation and forest management and the institutions to manage it already existed (Pagiola, 2002). There, targeted lands were owned privately (Ferraro, 2001).

In Guyana, the success of the conservation concessions is mainly due to the choice of the forest area where the conservation concession was set up. Primarily, the forest chosen was relatively remote and sparsely populated, with the closest village to the concession being located 50 miles away with approximately 63 households (Barnes *et al.*, 2008). In addition, the conservation concession was located in a region where there was no competition for the bid on the land, and not much economic activity was taking place before the concessions were established (Ellison, 2003). The same conditions were observed for the conservation concession implementation in Peru. In both Guyana and Peru, the conservation concessions have added immediate value to land that was virtually unproductive and not immediately desirable.

However, the situation was quite different in Guatemala where CI attempted to buy annual logging production from local communities on 75,000 hectares in the Maya Biosphere of the Northern Petén. CI faced intense opposition because the land was attractive for timber harvesting. Hence the communities protested the deal to devote their forest to sustainable timber harvest (Ellison, 2003). Based on this experience, it can be concluded that conservation concessions may work well only in place like Guyana, where the opportunity cost of land is low, and where there is no effort to withdraw existing activities (Ellison, 2003).

2.7 Implementation of PES for biodiversity conservation in Africa

Well-known in Latin America, PES for biodiversity conservation are relative new in Africa (Walker, 2007). There are only few initiatives being implemented in East and South Africa especially in Uganda, Kenya, South Africa and Tanzania. Today, however, PES in Eastern and Southern Africa primarily occurs on an *ad hoc* basis through small-scale pilot projects. Information gaps, lack of capacity to design and manage projects and the absence of

institutions to support on-the-ground implementation have largely hindered efforts to scale up (Katoomba Group, 2008).

In Uganda, Kenya and South Africa, some PES projects have been developed but only few are under implementation. In Tanzania, no project has been implemented yet. As far as PES for biodiversity conservation is concerned, just 2 projects were identified to be under implementation in Uganda and in Kenya (Katoomba Group, 2008).

In Kenya, the project consists of direct payment as a mechanism for conserving important wildlife corridor links between the Nairobi National Park and its wider ecosystem. The project is implemented by The Wildlife Conservation Lease Program. The project is at his operational phase. The lease program currently covers about 14,000 acres of the 2,200 km^2 of the Athi-Kapiti plains. The program has been implemented in Kitengela of Kajiado District. It is a private contract between the landowners and those running the lease program. Conservation Management Practices are as follow: no fencing, quarrying, cultivation or subdivision and the sustainable management of the land for Wildlife and grazing. Direct Payments at ksh 300/acre per year are given to the landowners from the Wildlife Lease program. Buyers of the services are Friends of Nairobi National Park, Wildlife Foundation and Kenya Wildlife Service. The Wildlife Foundation implements the lease program with financial support from Friends of Nairobi National Park and the International Fund for Animal Welfare. The African Wildlife Foundation, the African Conservation Centre and ILRI provided technical support for the implementation (Katoomba Group, 2008). No evaluation of the success of this project has been found in the literature.

In Uganda, the project Mgahinga Bwindi Impenetrable Forest Conservation Trust (MBIFCT) was set up in 1994 under the Uganda Trust Act. Though the sellers of the biodiversity service are the communities living in and around Mgahinga and Bwindi National parks and the Uganda Wildlife Authority (UWA), it is a deal between the Government of Uganda and the World Bank – GEF. The project is located in south-west Uganda, in Kabala and Kisoro districts. Here, the service been paid for is the conservation of the biodiversity in the two national parks financed by an endowment fund set aside by the GEF. The buyers of the service are GEF, World Bank and the Government of Uganda. The World Bank/GEF contributed the original capital for the fund worth US $ 4 million. The Government of Uganda and the World Bank decided to invest the fund offshore. MBIFCT manages the resources in

the national park on behalf of the endowment partners and the citizens of Uganda. The endowment funds are managed by Merrill Lynch Investment (UK) and the revenues generated are used to pay for the conservation activities. 40% of the revenue goes to the local community associations and 60% to UWA.

III Methods

The present study was carried out in six countries of the Congo Basin area: Cameroon, Central African Republic, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, and the Republic of the Congo. The chapter will present methods used for data collection and analysis.

3.1 Identification of interviewees

As we will mention in the next chapter, biodiversity conservation in the Congo Basin in the past was mainly done through the establishment of protected areas. Hence, lot of conservation funds and efforts has been directed towards protected areas to achieve conservation objectives. These funds have been used to support not only the management of protected areas, but also some initiatives implemented in their surroundings to address poverty of local communities affected by biodiversity conservation. It has been shown that many ICDPs concentrated only on areas of significant biodiversity, and often just on protected areas (Wells *et al*. 2004). For these reasons, we focused most in protected areas to identify mechanisms of incitation and compensation of local communities for biodiversity conservation.

The initial step in data collection was to make a list of all protected areas existing in the six countries of the Congo Basin. 25 protected areas have been identified in Cameroon, 14 in Congo, 13 in Gabon, 12 in Equatorial Guinea, 16 in Central African Republic and 21 in the Democratic Republic of Congo (See Annex 1 for the complete list of those protected areas). Then managers and organizations supporting the management of each protected area were identified for the interviews.

Two categories of interviewees were identified:

1- Those working directly on protected area management. This regroups protected area managers established by the government; and national and international NGOs supporting the management through implementation of conservation and/or development projects in and around protected areas.

2- Conservationists not working directly on protected areas' management but working on conservation issues in Congo Basin. In this category, we have mainly people working in conservation NGO with an interest on development of payment for environmental services' mechanisms.

With the help of at least one contact person in each country, we were able to identify potential interviewees who were then contacted either by email or by phone. A request for participating in the survey was sent to all these identified people involved in protected area management and biodiversity conservation. From the 132 actors requested to participate in the survey, 66 replied among which 64 agreed to participate. Annex 2 presents the list of institutions contacted in each country. Questionnaires were later on sent for the first time to those who replied positively to the request and later to all those contacted in the beginning. Above all, only 48 questionnaires were returned. International conservation organizations like WWF, WCS and ECOFAC supporting protected area management were extensively canvassed.

3.2 Questionnaires

Two different types of questionnaires were used according to the 2 categories of actors we had to examine.

The questions focused on the following aspects (see Annexes 3 and 4 for the complete questionnaires)

- Brief presentation of the protected area (This part was not included in the questionnaire for survey of biodiversity conservation actors, non-managers of protected areas);
- Existence of direct payment mechanisms for biodiversity conservation;
- Description of compensation mechanisms;
- Utilization of compensation funds;
- Importance of legal and administrative context;

A briefing note was attached to the questionnaires (see Annex 5). This contained a short presentation of the context of the research and introductory information about payment for environmental services, with a main focus on direct payments for biodiversity conservation. The purpose of this briefing note was to give the interviewees a general introduction about direct payments for biodiversity conservation, in order to help them identify and present likely mechanisms in Congo Basin; and distinguish them with other mechanisms.

3.3 Interviews

Questionnaires were sent to the interviewees who completed them and sent them back. To supplement the information, interviews were done either by phone, e-mail or face-to-face depending on the preference of the interviewees. Not all questionnaires were returned (Table 1) and it was not possible to have a direct interview with all the identified people because of their unavailability. Communication difficulties in the sub-region also considerably hampered the return of mail and therefore the number of responses to the survey since we were only able to visit two of the six countries (Cameroon and DRC).

Table 1: Number of questionnaires sent and returned per country.

Countries	Number of questionnaires sent	Number of questionnaires returned	Number of protected areas concerned with the returned questionnaires
Cameroon	30	15	12
Congo	17	7	5
Gabon	33	9	4
Equatorial Guinea	3	1	1
Central African Republic	10	3	1
Democratic Republic of Congo	39	13	8
Total	**132**	**48**	**31**

Source: Own data

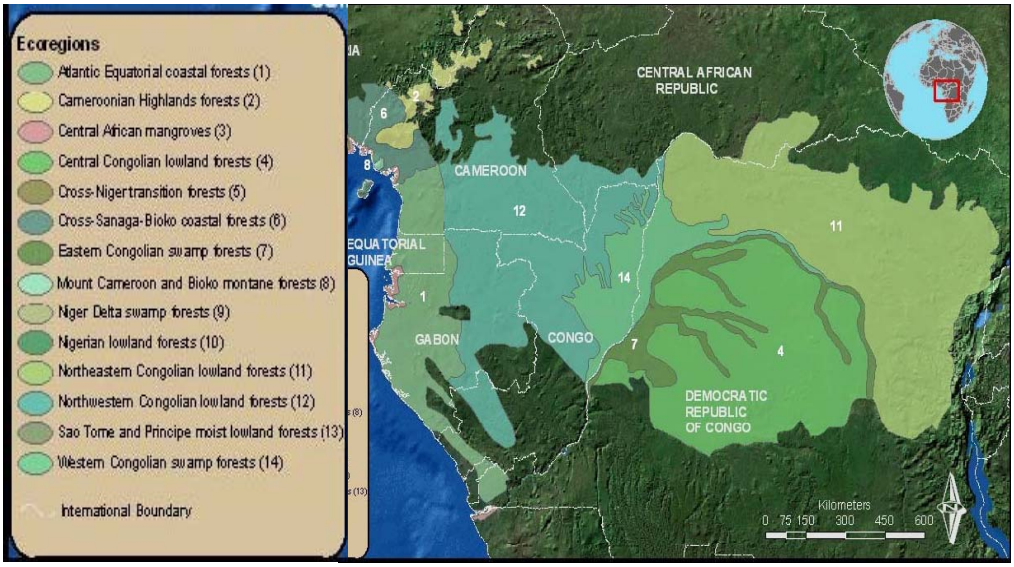
3.4 Data analysis

All the questionnaires were examined and entered into Microsoft Excel software which was used to analyze the data. The conservation activities were divided into initiatives with and without incentives. Concerning initiatives with incentives we distinguished between direct and indirect incentives and between sustainable use and conservation approaches.

The potential for implement direct payment for biodiversity conservation in the Congo Basin was assessed through the evaluation of existing mechanisms of compensation for biodiversity conservation in protected areas and the use of literature.

IV The context of biodiversity conservation in the Congo Basin

Congo Basin forest extends from the coast of the Atlantic Ocean in the west to the mountains of the Albertine Rift in the east (Figure 3). It encompasses an area of approximately 2 million square kilometers covering 6 countries - Cameroon, Central African Republic, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, and the Republic of the Congo.



Source: http://www.cbfp.org/tl_files/archive/evenements/brazza2005/biodiversity.pdf

Figure 3 : Congo Basin Forest

4.1- Regional cooperation for conservation

Regional collaboration for biodiversity conservation in Central Africa started in 1996 when Forests and Environment Ministers from the region including NGOs and international organizations signed a declaration on forest conservation: the Brazzaville Process. This was followed by the Yaoundé Forest Summit in 1999, which elevated forest conservation in the region to a higher political level. At the end of the summit, the Heads of State from six Central African nations - Cameroon, the Central African Republic, Chad, Equatorial Guinea, Gabon and the Republic of Congo (Brazzaville) - signed the Yaoundé Declaration in the presence of representatives from the international community notably the World Bank, United Nations and European Commission. Thus, the leaders pledged to create new forest protected areas, promote responsible forestry and adopted plans to combat illegal logging and poaching (COMIFAC, 2005).

Containing specific commitments to forest conservation and sustainable forest management, the Declaration has resulted in solid conservation achievements, including the setting up of millions of hectares of new forest protected areas, increased funding, cross-border conservation cooperation, and establishment of a regional body, the Commission of Ministers in charge of Forests in Central Africa (COMIFAC) to coordinate regional conservation initiatives. A seventh Central African nation, the Democratic Republic of Congo, has since signed the Yaoundé Declaration. Furthermore, a broad-based group of governments, implementers and donor partners have come together since the Yaoundé Summit, to address the issue of creating trans-border protected areas, harmonizing national forest policies, and encouraging greater participation of rural populations in forest management (COMIFAC, 2005).

At Brazzaville summit in 2005, the Africa's first regional treaty on conservation and sustainable management of forests, the COMIFAC Treaty, was signed. A strategic convergence plan called the "*Plan de Convergence*" for the implementation of the Yaoundé Declaration has been finalized and endorsed by COMIFAC. This involved the compilation of the different action plans identified by the member states. Priority activities were later identified from the *Plan de Convergence*. This plan has been updated and its implementation started in 2003 and extends till 2013 with three-year evaluation phases. The 4th strategic axis concerned biodiversity conservation with a focus on reinforcement of national protected area networks, joint management of trans-border protected areas and zones, and conservation of genetic plant resources.

At the Johannesburg World Summit on Sustainable Development in 2002, the Congo Basin Forest Partnership (CBFP) has been launched. The objective of this initiative is to provide support to efforts to conserve and develop the Congo basin forests. It supports then the implementation of the *Yaoundé Déclaration*. Association of more than 40 governmental and non-governmental organizations, it involves the United States, The United Kingdom, France, the European Union, World Bank, ITTO, etc. Working as a facilitator, the CBFP organizes dialogue and promoted cooperation between the partners, sets up a work program based on the guidelines established in the COMIFAC Convergence Plan (CBFP, 2008).

4.2- Approaches used for Biodiversity Conservation in the Congo Basin

Conservation actions in the Congo Basin are primarily concerned with large parks and areas located in "hot spots" of biodiversity, as well as in endemism centers, and they cover for most several hundred square kilometers (Perrings and Gadgil, 2002). Hence, biodiversity conservation in Congo Basin has mainly been done by declaring certain tracks of forests as protected areas. Conservation has begun in Congo Basin by the end of 19th century with the creation of the first elephant reserve (CBFP, 2006). The first national parks were established from 1925, but till 1970s they remained focused essentially on savannas and their wildlife. Forest protected areas have been established only from 1970 with the creation of the national park of Salonga (in DRC) and their number increased during 1980s, at the same time with the development of forestry. So key element of any biodiversity conservation strategy is those protected areas which are supposed to contain representative biodiversity of the country or the region.

The conservation based only on the big wildlife and the creation of national parks has turned out inadequate in forest environment. So, the focus on the bid wildlife had left the place to a much more global vision of the ecosystems where the human populations are taken into account and the conservation is envisaged in a scale exceeding widely that of protected areas.
Following the *Yaoundé Déclaration*, and with the support of ECOFAC Program, CARPE activities and conservation NGOs, conservation has been moved to a widely scale and Landscape concept has been introduced. The interest of Landscape concept is not only in the fact of joining protected areas in a wider context, but also and especially of integrating local communities which act directly or indirectly on these protected areas, in the processes of the conservation (CBFP, 2006). The Landscapes approach aims at a better conservation of the biodiversity inside the national parks by containing these in a gradual matrix of lessening threats as we get closer to the limit of the protected areas. U.S. partnership actions through CARPE program initially focused on 11 forest landscapes which are ecologically sensitive and biologically diverse areas and wildlife corridors viewed as the most vulnerable to deforestation and other threats to biodiversity. In 2006, the Virunga landscape in the DRC and Rwanda became the 12th landscape. Together, these landscapes comprise more than 80 million hectares of critically important tropical forest in Central Africa (USAID, 2007).
Every Landscape is developed from one or several kernels - generally protected areas - where the conservation of the biodiversity dominates on the other land use forms. The protected

areas remain the only spaces protecting relatively intact ecosystems in a set of more or less transformed environments and the national parks are the only spaces where conservation remains the first priority.

4.3- Protected areas and conservation in Congo Basin

Following IUCN classification, protected areas of Congo Basin mainly belong to categories II and IV. Three IUCN categories of protected areas are little or not represented in the sub-region. These are complete reserves (category I), natural monuments (category III) and protected landscapes (category V) (Doumenge *et al.*, 2001). In 2006, surface of protected areas in Congo Basin was as presented in Table 2 (CBFP, 2006). But new protected areas have been created with time.

Table 2: Surface of protected areas

	Area of conservation forests		Area of I-II IUCN categories		Area of IV IUCN categories		Protected forests in Landscapes	
	1000 ha	% [1]	1000 ha	% [1]	1000 ha	% [1]	1000 ha	% [2]
Cameroun	2346	11.9	1538	7.8	808	4.1	1257	53
Equatorial Guinea	515	27.1	354	18.6	161	8.5	382	74
Gabon	>2919	13.2	2919	13.2	?	?	2778	95
CAR	476	7.6	122	1.9	354	5.7	458	96
Congo	3265	14.7	2143	9.6	1123	5.0	3211	98
DRC	8989	8.3	6189	7.3	5245	2.9	7562	84
Central Africa	18510	10.2	13263	7.3	5245	2.9	15648	84

([1]) According to total forest area of the country

([2]) According to total area of protected forests of the country

V Results: State-of-the-art on incentives for sustainable biodiversity management and conservation in the Congo Basin

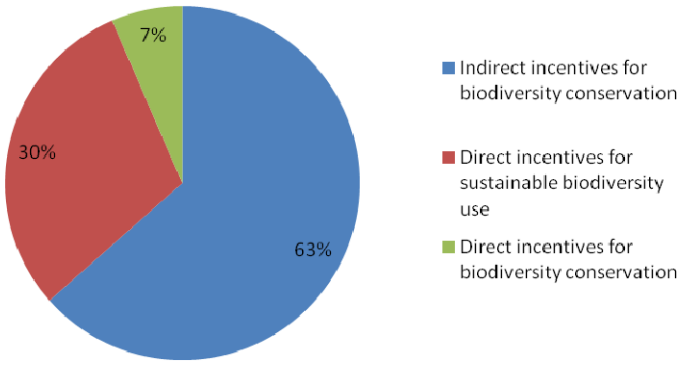
5.1- Protected areas in the Congo Basin

5.1.1- Activities implemented

Local communities who live within and nearby protected areas and who depend on forests for their livelihood can greatly influence conservation efforts through their attitudes and perceptions of biodiversity. In this way, local people are more and more involved in the management of protected areas in the Congo Basin. We observed that many initiatives are actually done in order to support biodiversity conservation in protected areas and promote the development of communities living around them. These initiatives are realized either by the government or by supporting organizations. They aim to reduce human threats on biodiversity preserved in protected areas. These threats include poaching, uncontrolled pasture and fishing, timber and firewood extraction, and agriculture. The initiatives that are actually used to reduce them will be presented in details later in the next sections. But in general, these initiatives bring some incentives to local communities to change their behavior to more environment-friendly practices. They can be grouped in three categories: indirect incentives for biodiversity conservation, direct incentives for sustainable biodiversity use and direct incentives for biodiversity conservation. These incentives do not exclude each other and are often used simultaneously in the same area.

Figure 4 presents the distribution of existing initiatives in incentive categories. It shows that the majority of activities implemented in and around protected areas use indirect incentives for biodiversity conservation. This is what is commonly known as integrated conservation and development projects (ICDP) which have been widely used in conservation initiatives since the 1990s. The idea is to promote global biodiversity through projects for economic and social development. Even if the effectiveness of ICDPs to achieve biodiversity conservation is hardly proved (Sayer, 1995; Brandon *et al*., 1998), it is still the main approach used nowadays in the Congo Basin. Direct incentives for biodiversity conservation are quite new and have not yet really been implemented. As, observed, only 7% of conservation initiatives fell in this category. This shows that Congo Basin countries continue to experiment with indirect

interventions to promote ecosystem conservation, rather than more direct contracting approaches using direct payments to achieve conservation.



Source: Own data

Figure 4: Frequency of incentive categories

5.1.2- Funding sources

Management activities of protected area are financed from different sources including international public and private funds, and national public funds.

International public funds come from different industrialized countries. These funds come mainly from the following sources: French Global Environment Facility, French Development Agency, Netherlands Department General of International Cooperation (DGIS), European Union, British High Commission, German Cooperation (GTZ, KfW), European Development Fund, International Tropical Timber Organization, United State Agency for International Development (USAID), Global Environment Facility, UNESCO and African Park Foundation.

International private funds are made of financial support from different sources to environmental NGOs acting in the management of protected areas. Environmental NGOs which are quite active in Congo Basin countries are WWF and WCS. Government budget allocations target mostly salaries of park rangers, managers and other government staff.

The figure 5 presents the contribution of the different sources of funding for biodiversity conservation and sustainable development activities around the Congo Basin. It is important

to note that the funds do not go directly to people, but they receive it in form of trainings, support of their activities, material and equipment. Deals are concluded either with local associations, professional groups, village committees or traditional leaders.

Source: Own data

Figure 5: Funding sources for protected area management in the Congo Basin

The graph shows that the conservation of biodiversity is mainly supported by the international community. The same report was done by IUCN (IUCN, 1999) who found out that between 1992 and 1998, approximately US $ 100 million were invested by external donors from 16 countries in conservation projects in Africa. This can be explained by the fact that international community perceives biodiversity conservation more favorably than local government and want to support conservation activities. It points out the interest of international community to conserve biodiversity and highlights by the same time its willingness to pay for it.

Identification of the international community as beneficiary of biodiversity conservation implies that it can be a potential buyer for that service. This is a first step in the process of implementing payment for biodiversity conservation in the Congo Basin. It is an important step since PES is based on a willing buyer – willing seller model assuming there is at least one buyer who benefits from biodiversity conservation services and is willing to pay for it. But, the magnitude of the benefits received by international community is still needed to be identified to help design mechanisms to capture some of these benefits and make them available for conservation (Pagiola *et al*, 2004). The way in which actual funds received from

international community are invested in conservation activities can be improved to shift from indirect to more direct incentives for biodiversity conservation.

5.2- Participation of local communities in biodiversity conservation

Policy initiatives in the Congo Basin to declare protected areas formally excluded local or indigenous communities from their planning and implementation, without giving them a stake in conservation or providing sustainable livelihood options. The management which has been command-and-control type led to many conflicts between protected areas managers and local communities. This is common in developing countries and it can affect the success of these policy initiatives (Ninan *et al*, 2007). Nowadays, policy initiatives have started to focus attention on social costs of conservation and many initiatives have been developed to involve local communities in the creation and management of protected areas. In this context, "Technical Operational Units" have been introduced in Cameroon to better involve local communities in conservation activities. These geographical areas are a combination of national parks, surrounded by forest concessions, safari hunting zones and agro-forestry areas; and are sparsely populated.

Local communities are involved in conservation through raising awareness and addressing their activities. They are also involved in management activities and decision making processes through strengthening their governance capacity and employing them. These activities are mainly implemented by national and international supporting NGOs.

5.2.1- Raising awareness and environmental education

Awareness and environmental education programs have been implemented in all of the 31 protected areas surveyed. Awareness focuses on the importance of biodiversity and its conservation. In this context, many meetings which aim to induce positive behavior towards forest conservation are held with local populations as well as customary political authorities. Conservation education programs are conducted using various locally adapted awareness materials such as radio broadcasting, films, pamphlets, posters; all addressing key issues of conservation. Environmental education improves in diffusion of information and laws of nature conservation. There is also capacity building of local communities on resources management.

For an active participation, some trained members assume the responsibility of educating their whole community. This help to ensure the sustainability of the education in resource management. A typical example is the program of community support, environmental education and participatory mapping carried out by WWF in the Landscape Salonga-Lukenie-Sankuru in DRC. To make the organization of meetings easier and increase their participation, landscape communities are divided in three groups. Representatives of communities are sensitized and trained by WWF. They have the responsibility to organize restitution meetings in their respective communities to release information about the project. They are also in charge of collecting data for the project during dialogue meeting at community level.

5.2.2- Strengthening local organizational structures for joint management

After awareness and environmental education, the next step involving local communities is the creation of local structures for participatory management. Table 3 presents the activities carried out in the process of joint management and how often they exist.

Table 3: Activities for joint management

Activities	**Frequency**
Creation of local structure for joint management	67%
Employment for local people	61%
Involvement of local people in the planning of activities	23%
Demarcation of PA and zoning of surrounding areas	23%
Creation of vigilance committees in the communities	20%

These local structures already existed in communities around 67% of protected areas investigated in this study. They are sometimes called community conservation committees, committees of dialogue, village committees for wildlife, dialogue committees or forest watching committees. They include all stakeholders with regard to natural resources of the protected areas. The role of these committees is to represent the communities in management decisions of the protected area and its surroundings. They constitute platforms for the exchange of information with local people. Some agreements have been signed between park managers and these committees stating the responsibilities of each party. Each party should respect the agreed deal for a better preservation of the park resources. When reforestation

activities have to be done, these committees are in charge of sensitizing the population to increase their participation. They are also in charge of informing them on conservation laws and of coordinating conservation activities and development projects at the local level. They constitute a key element for joint management.

Local communities are involved in planning of management activities in 23% of protected areas. They participate in these activities through their representatives democratically appointed. Community representatives are involved in the demarcation of protected area, the boundary verification and in the zoning of the surrounding areas. They are trained in tourism activities. After training they are recruited as either forest guards to assist with protection activities or tourist guides. They are fully involved in the anti-poaching activities through vigilance committees. Jobs and training opportunities offered and their participation in the zoning of the areas increases their ownership of the protected area. Hence, they use only the buffer zones and biodiversity in the core zone of the parks is preserved. The trend is now to consider their opinion in the decision whether or not to create protected areas.

5.2.3- Employment for local people

Offering jobs and employments was also presented in 61% of protected areas investigated as a mean to involve local people in the management. Table 4 presents the different employment opportunities and how often they are offered compared to each other.

Table 4: Types of employment offered and their distribution

Employment	**Distribution**
Forest guards or rangers	22%
Watchmen in anti-poaching activities	8%
Tourist guides	20%
Trackers and carriers	11%
Project staff	8%
Monitoring of activities	6%
Reforestation	11%
Laborers	14%
Total	100%

Local people are employed at different levels and the main jobs offered to them include forest rangers and tourist guides. They are also temporarily employed and paid according to the task in monitoring and management activities or for infrastructure building in development activities. For tourism, guides, trackers and carriers are recruited from local communities. Local people are increasingly recruited as full-time or part-time employers in conservation organization itself. This has a double-objective: while improving livelihood of some members of the communities through salaries they receive, it prevents them to get involved in biodiversity destructive activities. As staff of conservation organizations, they have signed that they should observe conservation norms and should not carry out illegal activities. Development projects around protected areas also employ local people at different levels to carry out activities.

5.3- Indirect incentives for conservation and sustainable use of biodiversity

These are initiatives that aim at promoting development in order to reduce people dependency on natural resources.

5.3.1- Development projects

Development micro-projects are the main activities implemented in the surroundings of PAs. They exist in more than 90% of PAs investigated in the Congo Basin. They are mainly carried out by national or international NGOs having different financial sources to support the PA management. NGOs objective is to address the drivers of deforestation and to promote the development of local communities whose access to natural resources is restricted by the creation of the PA. These activities are preceded by socio-economic studies to identify development needs of the populations. Funds are used either for social micro-infrastructures directly implemented by the NGOs in the villages, or to support local community development initiatives. In 26% of cases, the money is also used to finance micro-projects submitted by local people through the development committees. It is used to create a local development fund for micro-projects in 12% of PAs investigated.

There exists a contract between local communities - represented by local conservation committees - and NGOs supporting their development to achieve better conservation of resources. They contain restrictions to the access to resources and regulations concerning the participation in combating illegal activities. As their part in the deals, NGOs will finance

development projects submitted by local communities. For example, the GTZ provided financial support to improve school equipments and water supply, and to promote goat breeding in the Kahuzi-Biega National Park. In return, local people should not poach inside the park and should participate in anti-poaching by denunciating illegal hunters.

Their logic behind implementing development projects is based on the evidence that conservation will be undermined unless poverty is alleviated (Adams *et* al 2004). Poverty appears then to be one of the main drivers of deforestation which should be reduced to achieve biodiversity conservation. To alleviate poverty, NGOs bring development interventions and create alternative income sources for local people in return for setting aside land for conservation. It is also a form of compensation to local people for the loss of income since they depend on natural resources for their livelihoods. Through this, NGOs want to get the support of local people to conserve protected areas. Despite the fact that studies found that most of them have achieved little success, especially in terms of forest conservation, (Wells and Brandon, 1992; Wunder, 2001), many of such activities are still carried out around protected as mentioned before.

5.3.2- Training of socio-professional groups

With the help of socio-economic studies, the main socio-professional groups are identified. They are also called thematic commissions in some places like in the landscape Salonga-Lukenie-Sankuru. The objective is to ensure better awareness, discussion and training and to better address the impact of each socio-professional group on biodiversity conservation. These groups gather people having the same activities or the same impact on natural resources. We can distinguish for example:

- Hunters influencing wildlife;
- Farmers, local loggers, beekeepers, NTFP collectors using forest resources;
- Fishers having an impact on fishery resources;
- Traditional leaders having an impact on governance and access to the resources.

Meetings and training are held with these groups separately which improves their involvement in forest conservation and sustainable use. Managers can therefore negotiate with them on how to carry out their activities with respect to the PA established. The idea is to

control their activities and make them more environment-friendly in the buffer zones and to prevent them in the core zones of PAs. These groups receive training on how to make their activities more sustainable with regard to biodiversity. An example for such an activity, which will be discussed in the next section, is the development of husbandry as an alternative to poaching. Hence, another main objective behind organizing people in socio-professional groups is the promotion of alternative activities.

These socio-professional groups often receive some material incentives to improve their practices. For example in Mbam and Djerem National Park in Cameroon, a deal was signed between fisher groups and the park administration for sustainable fishing along the Djerem River inside the park. Utilization of poisonous product and small mesh fishing nets are forbidden. At the entrance of the park, there is a check-point where the fishing equipment is checked before the fishers can enter. At the same point, fishing harvests are checked when the fishers leave the park. The time spent inside the park is also limited. Fishers are also trained in sustainable fishing and they receive fishing and other equipment based on their expressed needs. These activities of sustainable fishing are supported by international donors through the channel of WCS. According to WCS, these activities have successfully reduced poaching inside the park, since fishers were poaching inside the park in the past while pretending to be fishing.

5.3.3- Alternative activities

Alternative activities are driven by some assumptions (Hughes and Flintan, 2001):

- Local people and their livelihood practices comprise the most important threat to the biodiversity resources of one area;
- Unless the basic needs of people living in and around biodiversity-rich areas are met, they will not support (or will be hostile to) conservation efforts.

Hence to achieve conservation, impacts of local communities on biodiversity should be mitigated by providing them with alternatives to natural resource-dependent livelihoods. Alternative projects are developed for those activities found harmful to biodiversity. Local people are trained and provided with some equipment to change their habits and practice new activities that are not or are less harmful to biodiversity. Alternatives activities are implemented in the surroundings of 60% of the investigated PAs. In this context, several livestock husbandry projects have been developed as an alternative to poaching. Depending

on the local people's choice, either pig or poultry husbandry has been supported. Moreover, fish farming has been promoted as an alternative for fishing in rivers crossing the PAs.

In some cases the same resources can be used by different users. In such a situation, managers said that they usually identify the users having the most harmful impact on the resources to be preserved and provide them with alternatives. For example, mangroves preserved in the Akanda National Park in Gabon have been threatened by women for fire wood and by fishers for fish smoking. Fishers have the most harmful impact on mangroves since they require big quantities of wood. They have been collecting wood for a long time and it was difficult to stop this practice even with control and repressive measures used by park managers. It appeared important to address fishers in order to reduce the pressure on mangroves. UNDP through CADDE NGO trained fishers and provided them with new smoking stoves and sawdust collected from sawmills. This can be seen as a compensation to fishers for restricting their access to mangrove. In return, they have to stop collecting wood from mangroves for smoking fishes and they should also participate in mangrove regeneration activities. Regeneration of destroyed parts of the mangrove is financed by FFEM and carried out by local wage laborers.

5.4- Direct incentive initiatives for sustainable use of biodiversity

Biodiversity is in the hands of people, and poor rural communities or landowners will not choose to conserve biodiversity unless it is beneficial to them in real and concrete terms, particularly since conservation is at their own cost. For these reasons, many initiatives have being taken to share benefits from biodiversity with local people in order to incite them to participate in the sustainable management of biodiversity. Here, we will present some initiatives that have been set up in the Congo Basin.

5.4.1- Government initiatives

Governments try to reward local communities for their participation in conservation by giving them back a certain percentage of profits derived from biodiversity. This is a way to recognize that local communities have been the main keepers of forests for long and also to incite them so that they can continue to act in sustainable resource management. In this perspective, some governments have introduced the transfer of a percentage (10 to 40 %) of the revenues from

tourism, mainly PA's entrance fees, to local communities. This is a form of compensation for their efforts in conservation and it encourages them to participate in biodiversity conservation. They have been aware that if biodiversity is not successfully preserved in the PA, tourism will be reduced or stopped and they will not receive compensation anymore. Such transfers are effective in some PAs in Cameroon, CAR, DRC and it is planned to also introduce them in Congo and Gabon. Transfer of part of tourism revenues to local communities is actually done in 20% of the PAs investigated. The percentage transferred can range from 10 to 40%. In Dzanga-Ndoki national park in CAR, 40% of the funds from park entrance fees are paid in a local development fund for micro-projects.

In some case, governments also compensate people displaced by the creation of a PA since they lose their actual livelihood and homes. This was tried for the creation of Korup National Park in Cameroon, but the government was not able to achieve relocation and communities are still located inside the park. Trying to establish people outside parks, governments can either pay out direct cash or provide new homes to these displaced families and communities. But they failed to achieve this compensation in many PAs in the Congo Basin and local people complain about it. It is suggested that instead of giving direct cash, it may be better to provide these displaced people with long-term income possibilities through training in better agricultural techniques or alternative crops (Butler, 2005).

5.4.2- Community Safari Hunting Zone

Communities can get from the government the property rights over some forest areas and obtain the authorization to receive and manage revenues from wildlife use. In return, the populations must contribute to the sustainable wildlife management, surveillance and monitoring of wildlife resources in these areas. Such forest areas exist around one of the PAs investigated, the Nki National Park in Cameroon. They are called community hunting zones (ZICGC) and can reach 40.000 to 140.000 ha. Actually, 17 ZICGC exist in Cameroon and they aim to secure usage rights of local communities and to increase their participation in the management of wildlife resources in the periphery of PAs (Bigombe, 2003). They also substantially contribute to increase their access to the benefits of wildlife management and conservation. They constitute a safety belt designed to strengthen the conservation of biological resources in PAs. There is a joint-management contract duly signed between government and local communities.

Having property rights over the resources in the community-management hunting zones, local communities can undertake contractual arrangement with outsiders. The central contractual arrangement is between the COVAREF (the committee set aside for wildlife management that acts as the seller on behalf of its constituent communities) and one or more safari operators buying the service. Safari operators are buying from local community the rights to bring sport hunters or eco-tourists into their concession areas either to hunt a set quota of animals, or to track, observe and take pictures of animals, or simply to enjoy the scenic qualities of an area. Revenues obtained from the management are used for development projects and for conservation activities.

The local communities around Benoue National Park in Cameroon use the revenues from the hunting zones as followed: 71% for development activities, 11% for operating charges of local wildlife committees, 8% for conservation (anti-poaching activities) and 10% for communication. Table 5 shows the use of the revenues from community-management hunting zones (ZICGC) in south-east Cameroon (WWF, 2004)

Table 5: Utilization of revenues from ZICGC in south-east Cameroon

Use of revenues	**Amount (FCFA)**	**Share (%)**
Operational charges	13 264 600	33.3
Construction of offices	7 532 000	18.9
Promotion of Education (Scholarships for students from bordering communities, construction and equipment of classrooms, donations of teaching materials to schools)	5 743 000	14.4
Community agricultural plantations	3 314 950	8.3
Motorcycles to improve monitoring of the area	2 636 000	6.6
Anti-poaching activities and development of simple management plans	2 494 250	6.3
Water supply	2 068 200	5.2
Habitat improvement	1 253 600	3.1
Material support to Baka Pygmies	1 250 000	3.1
Rural electrification	310 000	0.8
TOTAL	39 866 600	100

Source : WWF-Jengi ; State of ZICGC in South-East Cameroon, November 2004.

(1 euro = 655,957 FCFA)

According to the interviewees, community-management hunting zones were conceived not only as a mean of promoting rural development but also of conserving wildlife and wildlife habitats. Their success with respect to biodiversity conservation can be evaluated either through the monitoring of wildlife numbers or the use of ecological indicators which could therefore be one measure of performance to estimate the *additionality*. To achieve this, there should be regular monitoring of wildlife in PAs surrounded by community-management hunting zones to determine wildlife number and distribution. Assessment of the area should also be done to see whether there is an increase in habitat loss for agriculture or other land uses. One indicator of success can be therefore an increase or at least a stability of wildlife in PAs and a decrease in habitat loss.

5.4.3- Ecotourism

Tourism in PAs is known as ecotourism which is a mechanism that seeks to generate financing for forest conservation through selling visitation rights to biodiversity (Pagiola *et al*., 2002). Through it, livelihood of local communities can be improved for example by sharing benefits from ecotourism (e.g. PA's entrance fees) with them as mentioned before. Ecotourism has started in Congo Basin a long time ago, but it is still a new approach in most PAs. Nowadays, it is effective in 45% of PAs investigated and focuses mostly on big games. In Kahuzi-Biega National Park in DRC, an UNESCO World Heritage, ecotourism has started since nearly 10 years with the impulsion of GTZ and UNESCO and it focuses mostly on plain Gorilla (*Gorilla gorilla graueri*). The ecotourism generates income for local people (10 – 40% of the entrance fees) and employs them as guides, carriers and trackers. This is the classic scheme in almost all protected areas where ecotourism activities have been developed. The repartition key of revenues from ecotourism is normally decided by the government through the ministry in charge of PAs. But since there are not many tourists coming to visit PAs, there is not enough money to compensate local people.

In Campo Ma'an, a different kind of ecotourism has been promoted by WWF which doesn't focus on the park only but includes its surroundings (at the level of the TOU). Local associations have been created for the conservation of marine turtles. Based on their actions community-based ecotourism has been developed and is promoted along the coastline. Local

ecotourism groups receive from WWF capacity building in organizational aspects through training and exchange visits. One village receiving support of WWF in such ecotourism is Ebodjé, a village located along the Atlantic Ocean, about 50 kilometers from the town of Kribi. It is a fishing village with beautiful beaches where turtles come regularly to lay eggs from November to January. Ebodje was chosen as the site for the protection of marine turtles.

WWF supports local associations for the establishment of basic community infrastructures to improve the capacity of villages for tourism. These local associations, who directly receive the revenues from ecotourism, work hard for biodiversity conservation in their area in order to attract more tourists. Hence, a part of revenues from ecotourism is used to fund biodiversity conservation activities while the other part is invested in development activities and salaries of people employed in conservation and ecotourism activities. There are also some profits from ecotourism like selling meals and other products to tourists, which go to individuals and not to the community as a whole.

5.4.4- Community forestry

Four countries (Cameroon, Gabon, DRC and CAR) have adopted laws allowing the practice of community forestry, with community forests established only in Cameroon. They are still in their pilot phase in Gabon, DRC, and CAR. A community forest is a forest covered by a management agreement between the village community and the forest administration. In the Congo Basin, community forestry does not give ownership rights to local communities on land. Ownership rights on land remain to the State and the local community property right is limited to exploitation and utilization of forest resources. But local communities have an exclusive property right on the use of forest products and they can use it to control the access to the resources. Exploiting forest resources for their development is an incentive for local communities to manage the forest sustainably since forest products belong to them.

Community forestry is promoted in the surroundings of 10% of the PAs investigated. The 3 PAs are Campo Ma'an National Park and Dja Biosphere Reserve in Cameroon; and Minkebe National Park in Gabon. The idea is to use community forests as a belt to protect biodiversity inside the PAs. Through community forestry, communities have property rights on forest resources and can exclude illegal users. Conservation contracts can then be signed between conservation organization and those communities.

It was tried as a conservation partnership in Kilum Ijim forest in the north-western part of Cameroon (Gardner *et al.*, 2001). Following the failure of the Government, conservation communities represented by the NGO Birdlife International tried to achieve conservation of this valuable forest through community forestry. The total forest was shared in 18 community forests but a central conservation zone was kept as plant sanctuary. Birdlife International brings facilitation and support for the process of obtaining community forest. They also provide training in agriculture and livestock rearing since the main threat to the forest was identified to be the demand for new farmland. Conservation and monitoring activities are done by the local communities. But, three institutions participate in the conservation of the community forests: community-based management institutions, TOU (forest administration) and permanent ecological monitoring unit (conservation community seen as outside eye on the forest).

Communities are willing to voluntarily give up for a low compensation the option of converting the forest to other land uses which may produce greater cash benefits. Birdlife International wants to establish a trust fund to provide resources needed for long-term ecological monitoring as well as limited strategic support to communities. This fund has a potential for direct payments for biodiversity conservation since it can be used if needed to pay compensation to local communities.

5.5- Direct incentives for biodiversity conservation

Some direct incentives for biodiversity conservation are actually implemented or in the sight to be implemented in the Congo Basin. They fall in area-based and use-restriction schemes of PES.

5.5.1- Area-based schemes

5.5.1.1- Conservation Concessions

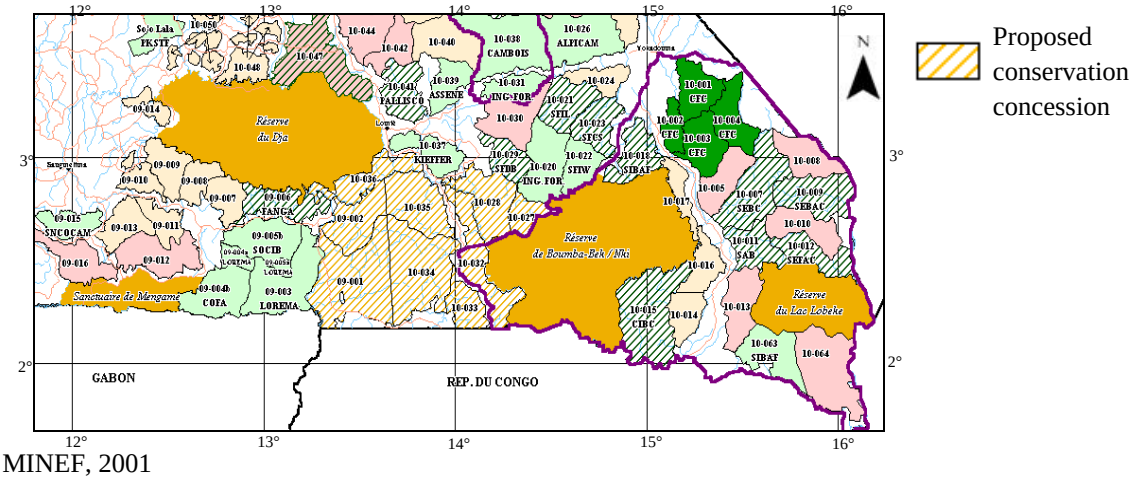
No conservation concession is already implemented in the Congo Basin but there are 3 conservation concession projects in the planning phase in Cameroon, DRC and CAR. (Table 6)

Table 6: Proposed conservation concessions in the Congo Basin

	Ngoila Mintom (Cameroon)	Dzanga Sangha Dense Forest Special Reserve (CAR)	Bonobo Conservation Concession (DRC)
Area (ha)	546,814	237,000	681,000
Beginning of negotiations	2002	2006	2008
Organization soliciting the conservation concession	CI andWWF	WWF	CI
Parties involved in the contract	CI and WWF Government Local communities Indigenous people	WWF Government Local Communities	CI Government Local communities
Duration of the proposition / contract	30 years (proposed before)	10 years (Financial analysis) 5 years (WWF proposition)	25 years
Types of payment proposed	Revenues from timber activities minus intangible benefits from nature conservation	Compensation to Government and local communities Management fees Trust fund for PA	1-Fees to central government 2-Contibution to local development fund 3-Management fees
Biodiversity to preserve (emblematic species)	Elephant; Gorilla Chimpanzee	Elephant Gorilla	Bonobo
Management and Monitoring Institutions	Conservation administration Local Pilot's committee Scientific and technical committee	n.a.	Consortium of CI, BCI and local NGOs
Estimated opportunity costs	$ 18 per ha per year	$ 72,952,924	n.a.
Estimated Implementation costs	n.a.	$ 325,825 per year to the government $ 4,872,543 for social investment and local people compensation	$ 600,000 to 1,050,000 per year

In Cameroon, the government set aside in 2002 an area of timber concessions between the Boumba-Bek and Dja Reserves (Figure 6), to be occupied by profitable conservation uses. CI was investigating the potential for a conservation concession in this context, with the basic idea of paying to the State a compensation as high as the revenues generated by the timber activities (tax revenues and profits) minus the intangible benefits derived from nature conservation (Karsenty and Lescuyer, 2001). But till now, the area has not yet been set as conservation concession.

In 2006, wildlife and protected area administration proposed 2 scenarios of management of this large forest area. In the first scenario the entire area (932,142 ha) is set aside for conservation at a price of 1000 FCFA (1.5 euro) per ha, which is paid by international community. In the 2nd scenario the area is divided into zones and the WWF proposed in 2007 to establish a TOU with only 546,814 ha area being set aside for biodiversity conservation in the central part. It is that area that can be purchased by conservation community as conservation area or Government can preserve for carbon credits in the REDD mechanism (Usongo et al., 2007).

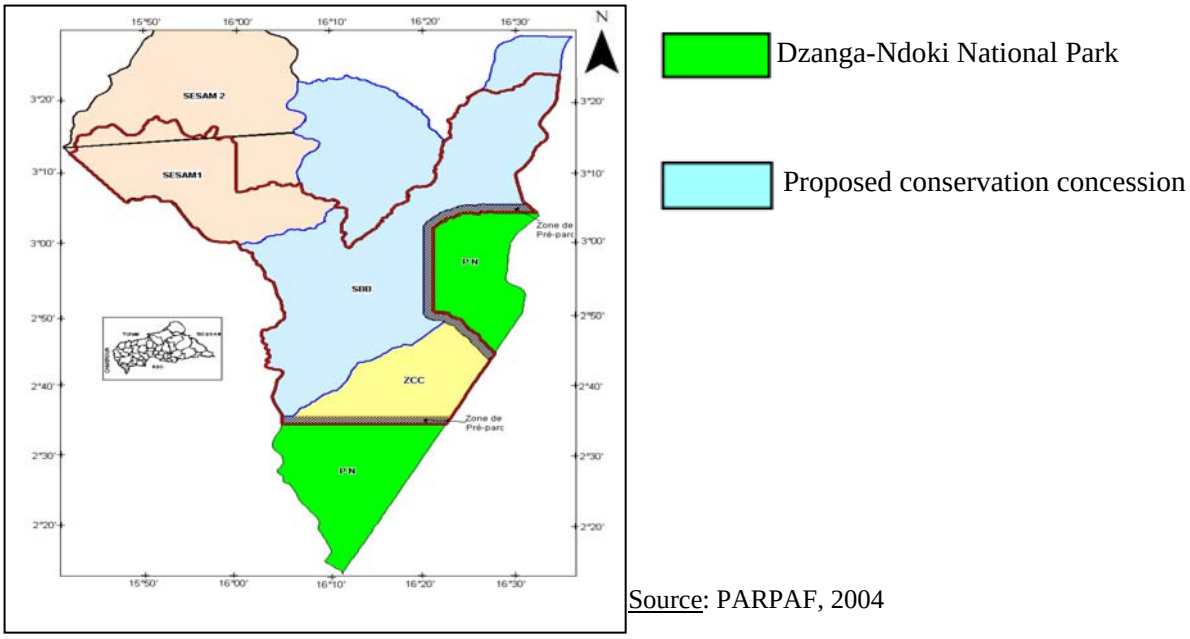


Source: MINEF, 2001

Figure 6: Location of Ngoila-Mintom forest, proposed conservation concession in Cameroon

In 2006 the WWF proposed to the government of CAR the establishment of a conservation concession in 237,000 ha of forest formally used as logging concession (Figure 7). But this proposition was rejected by the central government. Following the social conflicts led by formal utilization of that forest, and the proximity of this concession to Dzanga-Sangha PAs

conservationists suggest again its conversion into conservation concession. The objective is to reduce human pressure on the nature and promote ecotourism and carbon sequestration. Leasing taxes of the conservation concession is assumed to be paid by conservation actors. In an attempt to evaluate opportunity costs of conservation in that area, Lescuyer (2008) did a financial analysis of 3 management scenarios of this forest area. The study showed that over a 10-year period and at discount rate of 10%, conservation concession brings 68% less revenues than logging concession. To make conservation concession attractive to the government, conservation actors should pay to the Government a compensation for the opportunity costs which can be equal to forgone benefits minus benefits derived from nature conservation.

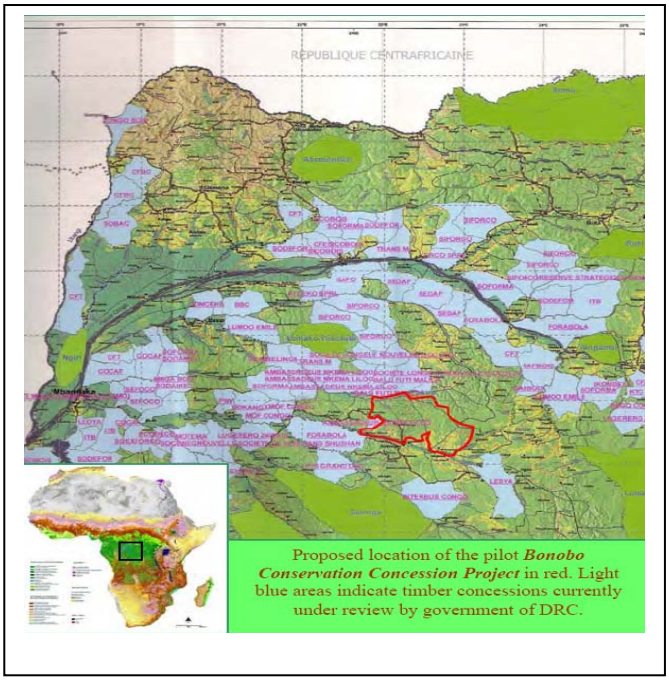


Source: PARPAF, 2004

Figure 7: Location of the proposed conservation concession in CAR

In DRC, the NGO Conservation International proposed to the government the creation of a 681,000 ha conservation concession (Figure 8). CI and its partner BCI made a proposal for conserving this concession in exchange of annual payments under a 25-year contract with the National Government and local communities. Through this contract, CI will pay to the government annual fees to preserve the forest equal to timber concession tax revenues and profits. CI will also contribute to a local development fund in order to provide social and economic benefits to local communities having customary rights over the concession area (CI and BCI, 2008). This proposal was presented to the government and discussed with other conservation actors at the Workshop on alternative models for sustainable management of

DRC forests held in Kinshasa in June 2008. But the project is still at the discussion and planning phase and it is not yet implemented.



Source: CI and BCI, 2008

Figure 8: Proposed location of the Bonobo Conservation concession in DRC

5.5.1.2- Plot set aside for carbon sequestration evaluation

In the surroundings of Salonga National Park in DRC, the WWF signed a contract with a community to set aside 10 ha of forest as a permanent plot for carbon evaluation. The deal is that the village should preserve this part of forest as a no man's land. All activities (agriculture, hunting, collection of NTFP) are forbidden inside that plot. The contract has been signed for a 10 years period but the payments are made annually to ensure that the conservation service will be provided through out the contract period. Deals are signed between WWF and the community represented by the chief of the village who is considered to be the plot guard. The local community asked for compensation in the form of agricultural equipment, livestock and staples. The compensation is received by the chief in cash and in kind and the WWF does not evaluate how the compensation is distributed among the community members. Monitoring is done by the WWF through sporadic visits of the forest area. This project is still in the very beginning and it is difficult to evaluate it now. But the contract is respected until now by all parties and the government is not involved.

5.5.2- Use-restriction schemes

5.5.2.1- Community marine turtles' conservation

Two approaches have been used to compensate local communities for the conservation of marine turtles in the surroundings of Campo Ma'an National Park in Cameroon. It is important to notice that marine turtles are fully protected in Cameroon since a ministerial decree in 1991.

The first approach is a direct payment to fishermen who catch marine turtles during their fishing activities and release them right after. A system of *patronage* has been put in place, consisting of payments for releasing turtles caught by fishermen. This payment is a compensation for fisherman whose net was damaged by the marine turtle caught. This strategy has proven to be effective in protecting marine turtles (Gilles Etoga, *personal communication*). There is not a contract signed, it is based on a voluntary participation of fishermen. This compensation is funded by the visiting tourists who pay sometimes up to 10,000 FCFA (15 euro) to the fishermen to release a sea turtle back to the sea. It thus can be unsustainable if there are no tourists coming anymore or if they are not willing to pay for it. It then appears important to develop a special fund from different actors. The compensation so far does not go to the entire community but to individuals. It is hence important to develop strategies to generate sufficient stimulus at the community level that would benefit protection of this species.

A second approach is the support to local organizations working for conservation of marine turtles. The WWF, through its *Kudu Zombo* project, has been involving local communities in the conservation and monitoring of marine turtles through capacity building and the transfer of management responsibilities to local people. In this perspective, two local associations for the conservation of marine turtles have been created in Ebodjé village. These associations carry out activities to save turtles and ensure their conservation. They raise awareness and undertake environmental education activities. They collect turtle eggs and bring them to hatcheries located near the Ebodjé beaches to guaranty the healthy development of the embryos. They are also involved in the monitoring of sea turtles nesting which is carried out through regular night patrols to identify nesting population dynamics over time (variation in the number of nesting females). They work in cleaning and maintenance of beaches and are responsible for the identification and the release of marine turtles caught by fishermen. To realize all these activities, they organize themselves in working groups getting financial

support of the WWF. These actions of local communities in marine turtle conservation have been rewarded by the WWF through realization of some social projects like supporting schools and the construction of social infrastructure. The expected result is an increase in marine turtle population.

5.5.2.2- Compensation for damage caused y wildlife

Another form of payment for biodiversity conservation is to compensate local communities living within or near protected areas for damages caused by wildlife in their agricultural lands. This is a provision of wildlife and forest law of all the Congo Basin countries but it is rarely practiced. Indeed in the surroundings of PAs, wildlife is pest for agriculture or causes injurious to humans. Payments in compensation for damage is then required (e.g., predator compensation funds of Defenders of Wildlife and the WWF) for local people for costs borne by not killing wildlife. This form of compensation was found to be used as incentive for biodiversity conservation in one of the investigated PAs, Monte Alen National Park in Equatorial Guinea. When local communities forego to kill protected wildlife which can be harmful for their crops and their lives, they are taking part in conservation. They should then be compensated by the administration in charge of the PA. To encourage farmers to protect the wildlife, the level of compensation should be higher than the actual damage since meat is another benefit from hunting.

5.5.2.3- Rewards for denunciation of poachers

A different mechanism to reward local communities for their efforts in conservation was observed in 2 of the PAs investigated, namely in Dzanga-Sangha and in Garamba National Parks in CAR and DRC respectively. In those PAs, conservation organizations decided to reward local people who denunciate and help to arrest poachers. The objective here is to solve poaching which is done for market purpose. Hence, when a villager denunciates a poacher to the conservation organization or to forest guards, he receives in return a compensation in kind (for example bicycles in Garamba) or in cash, when the poacher is arrested. The compensation is financed by the conservation organizations and the forest administration. It helps to incite local people to act as watchmen for the forest, assisting the forest guards in their function and participating in wildlife conservation.

5.5.3- Obstacles to implementation of direct payments for biodiversity

Interviewees raised some obstacles that can hinder the implementation of direct payments for biodiversity. They mentioned the followings obstacles:

- In most communities around forests, individualism is so developed that there is a lack of confidence among villagers. Hence, it is difficult for the community to join their efforts in conservation or to share payments received for conservation. Sometimes communities are not well organized and they do not have capacity to manage and control the resources.

- Communities are poor and they do not have the funds for implementing conservation contracts. Furthermore, the determination of opportunity costs is not an easy task. There is also the risk that communities because of their cupidity ask for high compensations that cannot be paid by conservation organization.

- National regulations concerning PES are missing.

- Trans-boundary cooperation between communities and governments is not good enough to ensure that outsiders will not threaten biodiversity preserved by neighbors. There is also a great difficulty to control the access of outsiders to the forests.

- A bad distribution of compensation among community members may lead to conflicts and the funds received might be invested by some members in harmful activities. The communities may lack the capacity to manage development funds.

- Administrative procedures are sometimes very slow and difficult to follow in the Congo Basin. Hence elites can finance the process for their own interest.

- Compensation funds are expected only from the international community which may make the payment unsustainable.

- Land use rights are not secured in most cases and can restraint the process.

VI Discussion and Conclusions: Possibility of implementing PES in the Congo Basin

6.1- Conditions for the success of payments for biodiversity conservation mechanisms in the Congo Basin context

Selling environmental services is not mentioned in forest laws of any country in the Congo Basin. It is a new concept and as mentioned in the previous chapter, there are some attempts to implement this mechanism but still at the conceptual phase. Questions like who, what and how to pay; what can be the costs of implementing it; how to ensure monitoring need to be considered carefully. The success of implementing direct payments for biodiversity conservation in the Congo Basin will depend on several issues. We will discuss some of them in this section.

6.1.1- Property rights

In the Congo Basin forests, land users do not have formal land titles. This can hinder direct payments for biodiversity conservation. The solution in Costa Rica was to create parallel contracts using private funds for landowners without titles. Hence, the absence of land titles does not mean that land users are excluded from PES schemes, since the main concern for private ES buyers is not *de-jure* land titles, but *de-facto* land and resource use control rights (Wunder and Wertz-Kanounnikoff, 2007). This means that land proprietors whose land claims are widely recognized and respected will be the efficient providers of conservation services, as long as they control access to the resources being protected. On the other hand, landowners with *de-jure* land titles but no *de-facto* control over their properties would not be qualified. Hence, what will be decisive among tenure rights for the efficiency of payments for biodiversity conservation is the “right to exclude” other people (Wunder, 2005). Nevertheless, *de-jure* and *de-facto* resource use rights are combined in community forestry giving a great advantage for PES.

An essential and initial step in implementing contracts for biodiversity conservation in the Congo Basin will be the recognition of property rights since the key task is to ensure that those providing conservation service have clear and enforceable rights to the benefits of their efforts. Without strong institutions to enforce rights, conservation contracts will contribute

little to biodiversity protection. However, allocating property rights can be an expensive and conflict-ridden process that will involve high transaction costs. How to solve then the problem of absence of property rights for local people?

Following the weak property rights observed in Africa, Le Roy (1996) presented a land control theory. He associated common law and traditional rights and showed that there exist in reality 25 ways of land and resources control in the African context (Table 7).

Table 7: Possible regulations of relations between man and land through land control (Le Roy, 1996)

Appropriation modes **Co-manage-ment mode**	Undifferentiated Control (*Access rights*)	Priority Control (*Access and substraction rights*)	Specialized Control (*Access, substraction and management rights*)	Exclusive Control (*Access, substraction, management and exclusion rights*)	Absolute exclusive Control (*Access, substraction, management, exclusion and alienation rights*)
Public (*common to all*)	Undifferentiated and public control	Priority and public control	Specialized and public control	Exclusive and public control	Absolute exclusive and public control
External (*common to n groups*)	Undifferentiated and external control	Priority and external control	Specialized and external control	Exclusive and external control	Absolute exclusive and external control
Internal-External (*Common to 2 groups*)	Undifferentiated and internal-external control	Priority and internal-external control	Specialized and internal-external control	Exclusive and internal-external control	Absolute exclusive and internal-external control
Internal (*Common to one group*)	Undifferentiated and internal control	Priority and internal control	Specialized and internal control	Collective property rights	Absolute exclusive and internal control
Private (*own to a person*)	Undifferentiated and private control	Priority and private control	Specialised and private control	Individual property rights	Owner

Table 7 shows 25 different land and resource control modes deriving from a combination of land appropriation and co-management modes. The land or resource appropriation modes determine the type of rights that the users have on the resources. They range from undifferentiated control with only the access rights to absolute exclusive control giving to the users the right to sell the resources. Co-management modes determine to whom the resources belong. They can belong to everybody (public goods), to one or many groups or to an individual (private goods). The modes that are highlighted in grey are those that are necessary for establishment of PES.

In the absence of ownership, the type of land control needed for conservation contracts are "exclusive and internal" control rights if contracts are to be signed with a community or a lineage. If they will be signed with families (since land mostly belongs not to individuals but to a family according to traditional law), "exclusive and private" control rights are required.

This means that to sign a conservation contract with a community one should look carefully that co-management is ensured by the community who has the rights to enter the forest, to use/harvest resources, to manage it, to regulate internal patterns of use or transform the resource through improvements or negligence, and to decide who shall have rights of access and how these rights can be obtained, lost or transferred. For a conservation contract with families, they should have, in addition to the previous rights, a private co-management right.

It is important to make a micro zoning of the forest to guarantee the respect of contract deals. According to traditional/customary law, agricultural fields and forest fallows belong to families and for those lands, it is better to make contracts with families since they can better control the access. But forest resources that are a little bit far belong to the whole village. Indeed, what predominates in forests surrounding villages is a collective property for a whole village community. It had been shown that a large part of forest area is made up of identifiable village lands that can be easily delimited by villagers (Karsenty *et al.*, 1997). It is difficult or even impossible to share these village lands between families and an easy option will be to make contracts with the village community since it will involve less transaction costs. But it will require community homogeneity which, in reality, is a myth. Even in traditional societies, at least some members of the community are actively seeking to increase their status through alternative exploitative land uses (Garnett *et al.*, 2007). So, this can be an obstacle for conservation contracts with communities since it will be difficult to convince all

the members of the community to respect contract deals. Hence the question of community's ability to self-enforce rights and contract deals remains, despite the fact that it has exclusive rights to prevent illegal users to access its forest.

Contract deals can be better enforced at family level since less people are to be controlled, but implementing contracts with families will involve more transaction costs in terms of time and money. A way to reduce these transaction costs, can be to shift to public schemes of PES where the State acts on behalf of ES buyers by collecting grants and paying alleged ES providers as it has been the case in Costa Rica, Mexico and China. But involving the Government could not necessary reduce transaction costs since it will also involve heavy information and coordination costs. Moreover, government regulation and decree enforcement are weak in the Congo Basin, which will reduce the efficiency of payments.

For the success of conservation contracts with communities, the property rights recognized by customary law should be secured by institutional arrangements. Delimitation and mapping in the presence of all the stakeholders are the first steps in the identification of individuals or groups to whom the property rights are allocated. Following it, conservation contracts will be made with those groups having property rights. Governments can improve the allocation of property rights for example through community forestry, by giving legal land titles to land holders or by legitimizing customary rights. Having the property rights on community forests, local people can decide to set them aside as conservation concession to get compensation. Conservation contracts will eliminate the open-access character of ecosystems (which is a driver of illegal use of resources) by allocating land to local residents.

As conclusion, for the success of direct payment for biodiversity conservation, property rights need to be established and enforced. This can be done through mapping to identify property rights. But the costs of establishing and enforcing property rights may be prohibitive. Independently on property rights, use-restriction PES scheme can be implemented to protect some biodiversity elements like large games and endangered species.

6.1.2- Opportunity costs and amount of compensation

To produce biodiversity conservation services, local people bear opportunity costs in terms of the benefits forgone from for example agricultural and livestock production, small scale logging, or hunting. Opportunity costs should be carefully evaluated through estimating the

value of forested land use alternative and this may involve high transaction costs (Ninan *et al*., 2007). Opinions are shared about whether the compensation should be lower or equal to these opportunity costs. Compensations can be lower than the opportunity cost because people can use the time formally spent in their "destructive" activities for other income generating activities, since paying for conservation means somehow paying them for doing nothing. This can work where forest is poor and people do not expect high benefits from it. Establishing a PES scheme in those areas are not efficient since there may be no *additionnality*. In general, this will rarely work in the Congo Basin since forest people are highly dependent on the forest and will hardly find alternative non-destructive activities as a source of income. Also they want to win from the situation and will expect compensation to be at least as high as their forgone benefits, no matter what they will do with the saved time. Moreover, if contracts are based on use-restriction for wildlife, it appears that small scale hunting should be stopped leading to more benefit lost. For forest people, hunting is often done as habits or way of living and not necessarily for income; so incentives should be high to change these habits and create other spare-time activities. Furthermore, there are also external costs of conservation, for example the wildlife damage costs and the expenditures to protect against wildlife attacks as mentioned in the results section. Considering all this, the possible trend in the Congo Basin will be to pay compensations at least as high as the opportunity costs. This is because the land user will typically reject payments for conservation offers if forest conservation is not sufficiently economically attractive, compared to the highly profitable land-use alternatives such as logging, mining, oil palms, soybeans, or perennial crops.

Conservation's opportunity costs are returns to alternative land uses and are subject to future changes (Wunder, 2005). This means that opportunity costs estimated at the beginning may not remain the same throughout the duration of long-term contracts. They can change over time based on demographic trend or land requested by external users. One cause of failure of ICDPs in the Congo Basin was the deficiency to consider population change as one of the slow changing variables that can drive the dynamics of a system once a threshold has been passed. In many ICDPs and subsequent case study analyses, there was an underlying assumption that the number of people in the landscape is relatively static, which is often not true (Garnett *et al,* 2007). If there is an increase in population, more land will be needed for agriculture meaning the opportunity costs for choosing conservation will be higher. Also, firms can be willing to purchase land at high prices for agricultural production of, for

example, biofuels. The value of alternative uses of land will then increase leading to higher opportunity costs. Another issue is that people seek to improve their living conditions. The compensation level that can be enough for them today may not be sufficient in the future. If they are not anymore satisfied by the compensation they might return to their "destructive" activities. Furthermore the economy in the Congo Basin countries is not stable and if it stagnates, it will induce high dependency on land leading to an increase in opportunity costs.

This raises the need to "revaluate" compensation levels and update contracts throughout their life. This will of course involve high transaction costs that should not be ignored in budgeting payments for biodiversity conservation mechanisms. All this should be taken into account to prevent failure of payments and it is necessary to foresee them in the contracts so that they can be re-negotiated at any time according to changing in opportunity costs.

6.1.3- Payment schemes

As mentioned before, biodiversity conservation in the Congo Basin has been mostly focused on preserving some elements of biodiversity especially big wildlife and endangered species. Biodiversity friendly practices in the proximity to PAs might be more valuable by helping to buffer and protect them. That is the area par excellence where to focus conservation contracts with communities in order to improve conservation in PAs. Two different approaches for wildlife conservation can be used in the Congo Basin: area-based and use-restriction schemes.

Area-based approaches target the conservation of biodiversity directly by paying local land users. This will restrict their access to land for agricultural and livestock production and can evolve into community PAs. It also works for conservation concessions proposed by CI, which compensates both, government and local communities, for the forgone benefits. For this approach, there should be a baseline to evaluate efforts in preventing deforestation. The baseline can be for example the absence of new deforested lands. This will only work if agricultural practices are changed and agricultural lands are settled through intensification of sustainable agriculture for example. Another baseline can be the reduction in deforested area assuming that more land for agriculture will be needed by local people in the future. In this way two types of baselines have been proposed for the future REDD mechanism, namely historical reference and reference with an adjustment factor (Karsenty, 2008). The second one is the one proposed by COMIFAC for the Congo Basin. Area-based approaches require long-

term payments involving high transaction costs. Payments should be done only if no more or less forest areas have been destroyed. But, it is difficult to prevent local people to access forest land and resources since they heavily depend on it for their livelihood activities (Gockowski *et al*., 2004). Trying to do so will involve high opportunity costs. It will then be difficult or even impossible to establish no man's land for biodiversity conservation outside PAs.

What appears then to be a more feasible option are use-restrictions, which preserve only some components of the biodiversity. This means that efforts will be done for species protection. Following this approach, indicators are needed to evaluate the production of biodiversity conservation services. An indicator, for example, can be wildlife population. At the beginning of the contract period there should be an inventory to determine the level of wildlife populations in the forest. A new inventory, which involves high but necessary transaction costs, should be planned at the end of each payment period. Payments should be done only if there is an increase or at least stability in the wildlife population. If not, the buyers of the service can decide to stop the payments. But it can happen that the indicator decreases because of some causes that cannot be attributed to the local community, for example diseases or natural hazards. It will be then necessary to investigate through field surveys whether the local community is responsible for this situation or not. This can be an expensive solution that will involve again high transaction costs in the pursuit of efficiency. This raises the necessity to associate also community efforts in conservation as indicators and not only the results, but efforts are difficult to evaluate. It means that conservation efforts should be paid on a case-by-case basis together with the results (wildlife population). Community efforts in conservation can be for example, denunciation or catching of poachers, wildlife habitat management and improvement (see maintenance of wildlife corridor in Kenya under PES or marine turtle conservation initiatives in Campo Ma'an), forest guarding and preventing the access of poachers.

The fact that people are unable to arrive at a universally accepted measure of biodiversity (Landell-Mills and Porras, 2002) has a critical implication in the feasibility of market based approaches for biodiversity conservation. Biodiversity can then be sold in bundled environmental services. This is the case in conservation concessions where both biodiversity conservation and carbon sequestration services are produced and can be sold as a bundle of services. This might be implemented in the near future in the Congo Basin since the REDD

mechanism is actively discussed nowadays (Laporte *et al*., 2007). The idea here will be to use REDD funds to support conservation.

6.1.4- Form and use of compensation funds

The collective property of forests around village raises the question of how to pay compensation to communities. Two situations are possible: either the communities distribute it among their members or the use of a development fund for development projects for the whole community. However, compensation can also be paid in kind instead of in cash.

The main problem in distributing money among villagers is that it can generate conflict as it was observed in south-east Cameroon with timber royalties, because of difficulties to share the money among community families. Furthermore, cash payments can exacerbate residents' exposure to risk by making them more dependent on markets for meeting their consumption needs. In rural areas, markets are often imperfect, and residents may not be able to transform cash into the resources they need or the prices are higher than anticipated (Ferraro, 2001). Sometimes, rural people have limited access to food markets because they are non-existent in their area or are far from their villages. They have then to travel to proximate small cities to have access to markets for the resources they need. Hence, payments may not prevent them from using the forest resources they agreed to conserve. To solve such a problem around logging concessions, timber companies in South-East Cameroon are trying to combat poaching by developing markets for beef and fish. But this appeared to be highly expensive. Nevertheless, such an initiative can also be adopted in the context of payments for biodiversity conservation to increase their efficiency. Market for agricultural products, meat and fish can be developed nearby the communities receiving money from conservation contracts. But this will increase the transaction costs.

Direct-payment initiatives do not require households to stop agriculture or to make significant labor investments. Hence they can continue and improve production on previously cleared lands, work off-farm or do stock farming in enclosures to diversify their food sources. Conservation payments can thus be viewed as a complement to rather than a substitute for current income. But, the beneficiaries may not be willing to invest their time and money received in environmental-friendly activities that can increase food availability.

Another possibility is to establish a local development fund which uses the payments for socio-economic projects. But this should be carefully discussed with the community members since it may not meet people desire. The payments belong to the whole community because of the collective property and hence it is necessary that community members agree on how the money will be used. Since the communities are not homogeneous this might rarely be possible (Garnett *et al*., 2007). This highlights again the problem of the collective property of forests in conservation contracts, in opposite to private property that made easy the implementation of such mechanism in Costa Rica (Ferraro, 2001). Nevertheless there should be a real appropriation of compensation funds management by local people so that they feel that they are really benefiting from the production of environmental services. Hence, local people may need the assistance of an NGO or an external actor to help them through a democratic process to come out with how they want to use the money. This can be expensive since past conflicts should be solved before continuing the process. Indeed, negotiations might then reveal prohibitively high transaction costs (money and time wise) also associated with structuring the PES deals (Wunder and Wertz-Kanounnikoff, 2007).

Payments through a local development fund also face the problem of fund embezzlement which is common in decentralized forest management. According to Oyono *et al.* (2007) it is necessary to use legal proceedings and punishments to solve this problem of corruption and fund embezzlement in redistribution and utilization of forest revenues.

To achieve this, there is the need of an authority acknowledged by all the stakeholders which ensures the compliance with the legal framework. This authority should be able to respect and enforce contracts even by force when necessary. It should have the right to take legal proceedings against illegal users and defalcators. So it must be legitimate and/or legal as far as possible and should not be corruptible by any illegal user of the forest. Such an institution will be respected by all the stakeholders only if it is established through a democratic and legitimate process as mentioned by Nguinguiri (2003) for the case of PA committees. Democratization appears then to be a key issue in the management of compensation funds for the success of conservation contracts. In some cases, however, the absolute authority of a traditional leader was able to ensure successful conservation. This was the case in Kilum/Ijim (Cameroon), where the relative success of the conservation program was the result of the absolute authority of the local traditional leader, the *Fon*. Such systems can be more stable in African context than democratization, although Gartlan (2004) found them to be rarely stable for long.

Nevertheless, there is empirical evidence that the democratization of decision making can benefit natural resource quality and also reduce corruption, which is increasingly seen as a threat to conservation (Agrawal and Chhatre, 2006; Smith and Walpole, 2005).

6.1.5- Monitoring

The objective of conservation contracts is to bring local people to forgo hunting and other biodiversity harmful activities in areas established for conservation. Conservation contracts require periodic payments and monitoring over time as mentioned in the previous sections. It then requires long-term investments in contrast to development-based interventions that often require short-term investments. It has been shown that conservation initiatives based on simplistic ideas of making limited short-term investments in local development did achieve neither sustainable resource use nor reduced pressure on parks (Wells *et al.*, 1999). But, despite its imposing institutional needs, a system of direct payments has many of the same institutional requirements as development-based interventions with an emphasis on monitoring biodiversity (Brown and Wyckoff-Baird, 1992; Wells *et al*., 1999). Existing local committees can be an asset in monitoring conservation contracts. But what guarantees that they will effectively monitor compliance with the terms of conservation? We raised already the question of the ability of local structures to enforce management norms. This introduces again the need of an external monitoring system with sequential audits, which involves high transaction costs.

Can the monitoring of conservation contracts be done by the governments? The monitoring system ensured by the governmental administration in most of the PAs in the Congo basin does not function well and some are just PAs by name nowadays. This shows that governments might be unable to monitor conservation contracts, unless they establish first a functioning monitoring system for the existing PAs.

In most of the communities living in and around Congo Basin forests, law enforcement, both traditional and formal, is weak. Conservation contracting may be impossible if good institutional structures and property rights are not set up. Setting them up will improve efficiency while increasing transaction costs.

6.1.6- Sustainability of funding

The success of conservation contracts will depend also on the sustainability of payments over time. Because of the *conditionality* of PES, payments will continue only if ES provider secures ES provision (Wunder, 2005). Hence, direct payments may not be a sustainable conservation program because of weakness of laws and regulations. So, there is a risk of misusing funds. Apart from direct payments, other possible financing mechanisms that can be used in the Congo Basin are Trust Fund for management of PAs or REDD mechanism.

Trust fund for PA management is an international fund whose revenue generated by investing the capital on international markets would allow long-term funding of conservation inside PAs. It is a potential direct financing mechanism that can be used for implementing direct payments for biodiversity conservation around PAs. A Trust Fund already exists in Sangha Tri-National foundation, a network of PAs integrating Cameroon, Congo and CAR. Another one is now proposed in DRC (Carr-Dirick, 2008). It will be good if a part of funds available can be invested in conservation contracts to improve conservation in PAs.

REDD mechanism can also be a future indirect financing mechanism for conservation contracts. REDD concerns only carbon sequestrated by the reduction of deforestation and forest degradation; but it is clear that while reducing deforestation, biodiversity conservation services are also produced in most cases. Furthermore, conservation contracts with communities can be used as a mean to achieve reduction in deforestation. Hence part of the money received from selling credit carbon can be used to finance payments under conservation contracts (compare REDD projects implemented by WWF in the region).

6.2- Synthesis on obstacles

In general biodiversity faces the particular challenge that, in spite of its general appreciation, willingness to pay directly for its conservation has remained quite limited (Wunder and Wertz-Kanounnikoff, 2007). Poverty, poor governance and political instability are significant limiting factors in achieving biodiversity conservation (USAID, 2004). Governance was mentioned by the interviewees as a great obstacle to the implementation of payments for biodiversity conservation.

All obstacles presented by the interviewees can be overcome but this involves high transaction costs that are sometimes not taken into account by authors presenting PES as a cheap mechanism to achieve biodiversity conservation (Ferraro and Simpson, 2002; Hardner and Rice, 2002; Saunders and Nussbaum, 2007). Potential transaction costs include the costs of improved access to information (provision of reliable information on biophysical complex and economic processes), the costs of defining property rights, the costs of drawing up legal contracts for the provision of biodiversity conservation service and investing in legal and institutional capacity (ITTO, 2004). In Costa Rica, substantial transaction costs were involved including administrative costs, costs imposed to participants through the need to prepare management plan, and costs for "bundling" small landowners for joint-management plan (Pagiola, 2002). There may be more costs, since the establishment of PES schemes normally requires a full economic valuation of all ecosystem services (as the buyers' benefits) and a detailed financial analysis of all alternative land-use options (as the providers' opportunity costs) (Wunder and Wertz-Kanounnikoff, 2007).

The high amount of compensation required in the Congo Basin may also be an obstacle to find ES buyers in the process of implementing conservation contracts, since conservationists prefer areas with low opportunity costs (Engel and Palmer, 2008). An estimation of the compensations needed for Ngoila-Mintom conservation concession indicated that they are very high compared to the conservation concessions already realized in other parts of the world. It is estimated to be US$ 18 per hectare per year, which is far more than the US$ 1.25 per hectare per year needed in Guyana (Karsenty, 2007). Based on this, we can conclude that payments for biodiversity conservation may be far more expensive in the Congo Basin than what is been imagined unless remote and low populated areas are selected. But this will question the principle of *additionnality* requested for PES mechanisms.

Another big obstacle might be the behavior of external and internal elites. Since the costs of implementing conservation contracts with communities may be so high that communities cannot afford them, there is a risk that elites seize the compensation. Their strategy will be to invest money in the implementation of contracts and later consider payments as revenue from their business. This was observed in Cameroon with the establishment of council and community forests; and community hunting zones (Ngoumou, 2005). There elites were very

active and willing to finance the long and expensive process of acquisition of forests. What happen later is that more than half of the revenue where used as administrative expenses and shared between the businessmen (elites); and less amount where spent in socio-economic infrastructure benefiting to the whole community (Bigombé, 2007). If this happens in the case of conservation contracts, it will reduce their efficiency since local people will not feel engaged by the contract anymore and will return to destructive activities. Hence payment under PES will be stopped since they are linked to conservation efforts. Conservationists should then make sure that elites do not invest money in contract establishment and they should bear themselves implementation costs. This will lead again to high transaction costs but is essential for the efficiency of conservation contracts.

6.3 Recommendations

The following recommendations can be made to facilitate implementation of conservation contracts:

- *Property rights*: it is important to recognize and legalize customary property rights which appear to be the best institutional framework through which access to resources can be controlled. Community forestry can be an actual solution to the problem of property rights since through it, local people have secured rights over forest resources;
- *Opportunity costs*: it is important to carefully evaluated benefits forgone by doing conservation, which can be far more than just agricultural revenues. It should take into account the evolution of rural economies and the improvement of living standard;
- *Type of payment schemes*: direct incentives for biodiversity conservation observed in the Congo Basin are mainly use-restriction schemes. This may be the appropriate scheme, where contracts can be done to restrict use rights to some species that we want to preserve. Area-based scheme may not be appropriate since local people heavily depend on land for agriculture. But land deforested for agriculture should be controlled since forests are wildlife habitat and focus should be put on reducing new deforested land for agriculture. This can be done through intensification of sustainable agriculture on actual farmlands to increase farmer income;

- *Local institution*: the local institution which will represent the community in the deal and manage funds received from payments should be acknowledged by all stakeholders. It should be legitimate, legal and able to enforce contracts. Capacity of existing local institutions should be increased to make them credible and competent to enter into contracts;
- *Monitoring*: because of weakness of communities in law enforcement, there is a need of an external monitoring system for conservation contracts;
- *Conservation contract funds and REDD mechanism*: there might be synergies between REDD and conservation schemes if not only governments receive such payments. Since the terms of the payment mechanisms under REDD are not yet established, it may be possible to think of REDD projects for biodiversity conservation. In this way, REDD might finance conservation contracts. Trust fund for PA management might also provide funds to implement such contracts in the surroundings of PAs.

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Annexes

Annex 1: Complete list of protected areas in the Congo Basin countries

Protected areas	Area (ha)	Date of creation	IUCN_Categories
Cameroon (25)			
1- Dja Biosphere Reserve	526,000	26. Apr 1950	IV
2- Lobeké National Park	217,854	19. March 2001	II
3- Campo-Ma'an National Park	264,064	19 november 1932 Campo/10 octobre 1980 Campo-Ma'an	II
4- Mbam et Djerem National Park	125,000	colonial period Pangar et Djerem/ 1982 Mbam et Djerem Fauna Reserve and 2000 , changed into national park	II
5- Korup National Park	125,900	1937 / National Park in 1986	II
6- Bénoué National Park	180,000	11th november 1932/ became National Park on 5th december 1968	II
7- Waza National Park	170,000	1934/ National Park in 1968	II
8- Faro National Park	330,000	1980	II
9- Bouba Ndjida National Park	220,000	1968	II
10- Kalamaloué National Park	4,500	1968	II
11- Vallée du Mbéré National Park	77,760	2004	
12- Mozo Gokoro National Park	1,400	1968	II
13- Mpem et Djim National Park	100,000	2004	
14- Douala-Edéa Reserve	160,000	1932	IV
15- Kimbi Wildlife Reserve	5,625	1964	IV
16- Santchou Wildlife Reserve	7,000	1964	IV
17- Mbi Crater Wildlife Reserve	370	1964	
18-Ossa Lake Wildlife Reserve	4,000	1968	IV
19- Banyang Mbo Sanctuary	66,000	1996	VI
20- Yaoundé Zoological Garden	2.07	1951	
21- Limbé Zoological Garden	0.5	1963	
22- Garoua Zoological Garden	1.5	1966	
23-Boumba Bek National Park	238,255	En création	II
24- Nki National Park	309,362	En création	II
25- Mefou National Park	1,044	En création	
Congo (14)			
1- Odzala-Kokoua National Park	1,354,600	1935 / 2003 (extension)	II
2- Nouabalé-Ndoki National Park	386.592	1993 / 2003 (extension)	II
3- Télé Lake Community Reserve	438,960	10th may 2001	IV
4- Conkouati Douli National Park	504,950	1980 (Reserve)/1999 (National Park)	II
5- Léféni Wildlife Reserve	630,000	1955	IV
6- Mont Fouari Reserve	15,600	1958	IV
7- Dimonika Wildlife Reserve	136,000	1988	
8- Tsoulou Wildlife Reserve	30,000	1963	IV
9- Mont Mavoungou Hunting Zone	42,000	1958	VI
10- Nyanga nord Hunting Zone	7,700	1958	IV
11- Nyanga sud Hunting Zone	23,000	1958	VI
12- Lossi Sanctuary	35,000	2001	
13-Sanctuaire de Lessio -Louna	44.000	31. Dez 99	
14-Sanctuaire de Tchimpounga	7.000	31. Dez 99	
Gabon (13)			
1- Lopé National Park	491,291	2002	II
2- Minkébé National Park	756,000	2002	II
3- Loango National Park	155,224	2002	II
4- Akanda National Park	53,780	2002	II
5- Pongara National Park	92,969	2002	II
6-Plateaux Batéké National Park	204,854	2002	II
7- Monts Birougou National Park	69,021	2002	II
8- Monts de Cristal National Park	119,636	2002	II

9- Mayumba National Park	97,163	2002	II
10-Ivindo National Park	300,274	2002	II
11-Moukalaba Doudou National Park	449,548	2002	II
12- Mwagné National Park	116,475	2002	II
13- Waka National Park	106,938	2002	II
Equatorial Guinea (12)			
1- Monte Alen National Park	200,000	2000	II
2- Corisco e Elobeyes Natural Reserve	53,000	2000	IV
3- Los Altos de Nsork National Park	70,000	2000	II
4- Caldera de Luba Scientific Reserve	51.000	2000	Ib
5- Rio Campo Natural Reserve	33,000	2000	IV
6- Rio Muni Natural Reserve	60,000	2000	IV
7- Playa Nendyi Scientific Reserve	500	2000	Ib
8- Pico Basile National Park	33,000	2000	II
9- Piedra Bere Natural Monument	20,000	2000	III
10- Piedra Nzas Natural Monument	19,000	2000	III
11- Isla de Annobon Natural Reserve	53,000	2000	IV
12- Monte Telemon Natural Reserve	23,000	2000	IV
Central African Republic (16)			
1- Bamingui- Bangoran National Park	1,156,000	1933	II
2- Dzanga-Ndoki National Park	120,000	1990	II
3- Manovo- Gounda- Saint Floris National Park	1,740,000	1933	II
4- Dzanga Sangha Special Reserve	315,900	1990	IV
5- Mbaere Bodingue Integral Reserve	45,000	1996	II
6- André Félix National Park	170,000	1940	II
7- Vassako Bolo Integral Reserve	86,000	1933	Ia
8- Bassa Lobaye Biosphere Reserve	14,600	1951	IV, V
9- Ouandja Vakaga Wildlife Reserve	480,000	1939	IV
10- Aouk Aoukalé Wildlife Reserve	330,000	1939	IV
11- Gribingui Bamingui Wildlife Reserve	450,000	1933	IV
12- Koukourou Bamingui Wildlife Reserve	110,000	1940	IV
13- Nana Barya Wildlife Reserve	230,000	1953	IV
14- Yata Mbaya Wildlife Reserve	420,000	1940	IV
15- Zemongo Wildlife Reserve	1,010,000	1925	IV
16- Avakaba Presidential Park	170,000	1968	
Democratic Republic of Congo (21)			
1- Salonga National Park	3,656,000	1970	II
2- Virunga National Park	780,000	1925	II
3- Okapis Wildlife Reserve	1,372,625	1992	II
4- Luki Biosphere Reserve	33,000		II
5- Garamba National Park	492,000	1938	II
6- Maiko National Park	1,083,000	1970	II
7- Kahuzi-Biega National Park	600,000	1975	II
8- Mondo Missa Hunting Reserve	163,000	1974	VI
9- Maîka-Penge Hunting Reserve	250,000	1951	VI
10-Mangroves Reserve	76,000	1992	
11- Swa-Kibula Hunting Reserve	140,000	1952	VI
12- Mangaî Hunting Reserve	36,000	1944	
13- Lubudi S Hunting Reserve	9,200	1959	VI
14- Bushimaie Hunting Reserve	60,000	1958	VI
15- Bili-uéré Hunting Reserve	6,000,000	1974	VI
16- Bombolumene Hunting Reserve	350,000	1968	VI
17- Rutshuru Hunting Reserve	100,000	1953	VI
18- Luama-Katanga Hunting Reserve	343,500	1935	VI
19- Rubi-Télé Hunting Reserve	908,000	1930	VI
20- Kundelungu National Park	760,000	1970	II
21- Upemba National Park	1,173,000	1939	II

Annex 2: List of institutions contacted for the interview

Institutions	Number of contacts made per institution	Number of participations
Cameroon		
ECOFAC	1	1
WWF	9	5
WCS	3	3
Government (Conservators of PAs)	15	6
TNS	1	0
CWAF	1	0
Congo		
ECOFAC	2	0
WCS	6	3
Government (Conservators of PAs)	5	3
TNS	1	0
PPG	1	1
JGI	1	0
HELP	1	0
Gabon		
WWF	5	2
WCS	12	1
ECOFAC	2	0
Government (Conservators of PAs)	6	4
FIGET	1	1
CAWHFI	1	0
ZSL	1	0
Smithsonian Institute	1	0
Max Planck Institute	1	0
CADDE	1	0
ASF	1	0
PPG	1	0

Equatorial Guinea		
ECOFAC	1	1
CI	1	0
Government (Conservators of PAs)	1	0
Central Africa Republic		
WWF	3	1
ECOFAC	3	0
Government (Conservators of PAs)	1	1
GTZ	2	0
RVDD/APDS	1	1
DRC		
WWF	7	3
WCS	3	1
ECOFAC	1	1
Government (Conservators of PAs)	14	4
DFGFI	2	1
Care International	1	0
FZS	1	0
Gorilla Organization	1	1
PICG	1	0
WD	1	1
ZSL	1	0
APF	1	0
CI	1	0
PNUD	1	1
Nature +	1	0
AWF	1	0
CAWHFI	1	0

<u>Annex 3</u>: Questionnaire for protected area managers

I- SHORT PRESENTATION OF THE PROTECTED AREA

Name of the protected area:

Location in the country:

Area:

Date of creation:

Main resources preserved:

Source of financing:

(*Please complete the presentation for the protected area that you support in management*)

II- EXISTENCE OF A MECHANISM OF DIRECT PAYMENT FOR BIODIVERSITY CONSERVATION

1- How do you proceed to encourage local population preserve biodiversity? Which activities are conducted to stimulate their participation in biodiversity conservation?

2- Are there already situations where local communities receive a direct or indirect compensation for acting in biodiversity conservation?

3- If not, do you think of setting up this kind of mechanism?

4- What are the main constraints to the set up of direct payment for biodiversity conservation?

End of for those who will not set up this kind of mechanism.

III- DESCRIPTION OF THE MECHANISM OF COMPENSATION

5- What biodiversity is concerned with the mechanism? Why did you choose it?

6- Since when exist the initiative?

7- Who is funding this mechanism? How often are payments made?

8- Who gave the idea of developing such a mechanism?

9- Who are local actors involved in the mechanism and why did you chose these communities?

10- How do they have clear, legal and secure customary rights on biodiversity?

11- What is the amount of compensation and how was it defined?

12- What are the terms of the deal with local communities? Who in concrete terms receive the compensations and in which nature?

13- How are compensations linked to the level of biodiversity conservation? What conservation management practices are required from those receiving the compensation?

14- Is biodiversity conservation service bundled with other environmental services (carbon, water, landscape…) in the deal? If yes, which ones?

IV- **UTILIZATION OF COMPENSATION FUNDS**

15- How do local people decide on how income from compensation funds will be spent?

16- What are institutions/organizations engaged in the payment scheme and what is their roles?

17- What are the actual and future main risks associated with this initiative at local level?

V- IMPORTANCE OF LEGAL AND ADMINISTRATIVE CONTEXT

18- Which mechanisms are set up to ensure the respect of the terms of the deal?

19- Which mechanisms are set up to ensure the durability of the payment?

20- Is there any involvement of the government in decreasing risks associated with payments for environmental services?

<u>Annex 4</u>: Questionnaire for survey of biodiversity conservation actors, non-managers of protected areas

I- EXISTENCE OF DIRECT PAYMENT FOR BIODIVERSITY CONSERVATION MECHANISMS

21- What are the main measures generally used to encourage local people actively participate to biodiversity conservation?

22- Do you think that Integrated Conservation and Development Projects have accomplished biodiversity conservation objective? Why?

23- Do you think that community-based conservation initiatives have accomplished biodiversity conservation objective? Why?

24- How do you think that payments for biodiversity conservation mechanisms can be implemented in Central African Countries?

25- Do you know some current or future initiatives in Central Africa where local communities receive or will receive a direct compensation (in kind or cash) for their role in biodiversity conservation?

If positive answer to the 5th question, please kindly continue the questionnaire. If not, it's over.

II- DESCRIPTION OF COMPENSATION MECHANISMS

26- For each direct compensation initiative, what element of biodiversity is concerned with the mechanism? Why?

27- Where is located the initiative? On what area? Since when?

28- Who is funding these mechanisms? How often are payments made?

29- Who gave the idea of developing such a mechanism? How was the amount of compensation defined?

30- How do beneficiaries of the compensation have clear, legal and secure customary rights on biodiversity?

31- What are the terms of the deal with local actors? Who in concrete terms receive the compensations and in which nature?

32- What is the link between these compensations and the level of biodiversity conservation? What conservation management practices are required from those receiving the compensation?

33- Is biodiversity conservation service bundled with other environmental services (carbon, water, landscape…) in the deal? If yes, which ones?

III- UTILIZATION OF COMPENSATION FUNDS

34- How do local people decide on the use of income generated from compensation funds?

35- What are institutions/organizations engaged in the payment scheme and what is their roles?

36- What are the actual and future main risks associated with these initiatives at local level?

IV- IMPORTANCE OF LEGAL AND ADMINISTRATIVE CONTEXT

37- Which mechanisms are set up to ensure the respect of the terms of the deal?

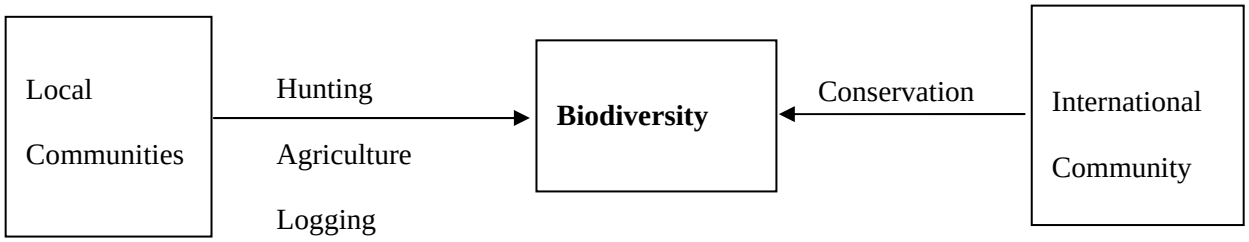
38- Which mechanisms are set up to ensure the durability of the payment?

39- Is there any involvement of the government in decreasing risks associated with payments for environmental services?

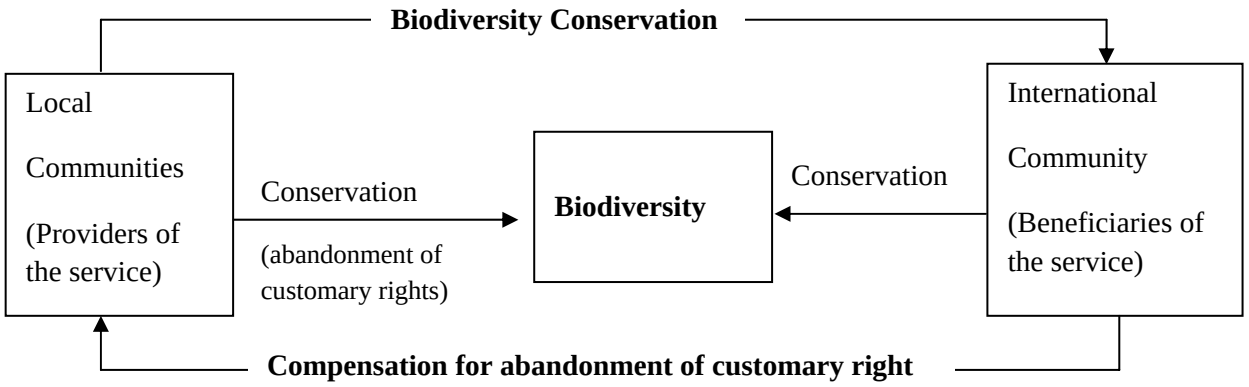
<u>Annex 5</u>: Briefing note for questionnaire

The present research is done in the framework of the project OFAC (Observatory of Central Africa Forests). It deals with the "*Mechanisms of payment for environmental services (PES) of Congo Basin forests: the case of biodiversity conservation*"

PES constitutes a new form of financing biodiversity conservation with a dual objective of increasing conservation and improving livelihood of local communities. These are payments intended to promote environmental services, like biodiversity. As far as biodiversity conservation services are concerned, these are direct incentives (compensations in kind or in cash) that forest users receive to forego destructive practices or reduce some of their activities that are judged harmful to the biodiversity (see figure)



Initial context: local communities use biodiversity for their well-being causing a threat on it. By the same time, international community would like to see this biodiversity be preserved.



Final context with PES : local communities agree to preserve biodiversity by forsaking their customary rights, in exchange of a compensation coming from the service beneficiaries.

This type of mechanism is promoted today to improve the conservation of biodiversity existing in tropical forests, especially in Latin America. It differs from classical conservation strategies that are generally based on indirect incentives through which conservation is the secondary benefit of another activity. In this new mechanism, biodiversity conservation is directly targeted and constitutes the direct benefit of all activity conducted.

The objective of the present research is to carry out an inventory and evaluation of initiatives of direct incentive for biodiversity conservation in Congo Basin, to draw up expected advantages and real limitations.

This questionnaire is sent to biodiversity conservation actors in the region, mainly to « managers » of protected areas. It includes 20 questions and only 4 for those who do not intend to set up such a mechanism. Questionnaire should be filled out for each protected area separately.

Do not hesitate to present for each protected area all the actual or future initiatives undertaken to compensate local communities, inciting them to keep intact natural ecosystems.

Information got from this questionnaire will be subject of a strict scientific use. The result of this study will be sent to you and valued in the forthcoming State of Congo Basin Forests.

Thank you for your collaboration